WASTEWATER COLLECTION AND TRANSMISSION SYSTEM (WCTS) – ASSESSMENT AND REHABILITATION PROGRAM
LOSS CONTROL MANUAL

City of Memphis

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1.0 General Safety

1.1 Memphis WCTS Project Loss Control Program

1.1.1 Introduction

This Project Loss Control Program provides an administrative structure within which Contractors present on the project site shall provide both for the safety and health of their employees and other individuals affected by their activities and for the protection of the environment and property. The Project Loss Control Program does not relieve Contractors of any of their traditional or specific legal responsibilities with respect to occupational safety and health or the protection of the environment or property. Instead, the Project Loss Control Program provides for consistency among the various Contractors' individual programs; monitoring of Contractors' conformance with their individual programs, the Project Loss Control Program, and the Project Environmental, Health, and Safety (EHS) requirements; initiation of corrective actions when nonconformances are identified; and administration and reporting to reveal the effectiveness of the Project Loss Control Program. The Project Loss Control Program is not all-inclusive, and it is expected that the Contractor comply with all site-specific requirements.

Note: The requirements set forth in this manual are to be passed down to all Contractors' lower tier subcontractors. The term "Contractor" identifies Contractors with employees working on the project. The rules in this Project Loss Control Manual apply regardless of whether the terms used in the Contract are Contractor, Subcontractor, Supplier, Vendor, or other similar terms.

1.1.2 Project Loss Control Program Elements

The Project Loss Control Program includes the following major elements:

- A Project Loss Control Manual that will establish safety and health guidelines and requirements.
- Identification of the minimum requirements for individual Contractors' loss control programs.
- Review of each Contractor's loss control program for conformance with the minimum requirements of a Contractor's Loss Control Program as stated in Section 1.2, Contractor's Loss Control Responsibilities and Program Requirements.
- Monitoring of the Contractors' activities for general compliance with the Project Loss Control Program and Contractors' Loss Control Program requirements.
- Procedures for advising Contractors of safety and health violations and issuance of violation notices.
- Procedures for initiating corrective action and back charges to the Contractor if he/she does not comply with safety, health, security, and environmental violation notices.
- Weekly construction coordination meetings that Contractors are required to attend.

- Monthly loss control reports.

1.1.3 Project Loss Control Program Administration

Overland Contracting Inc. shall administer the Project Loss Control Program and shall have such authority as described in this Project Loss Control Manual.

1.1.4 Rules We Live By

Safety is ingrained in the Overland Contracting Inc. culture, and it is front and center in all of the work we do. To ensure that employees return home safely at the end of each workday, the Safety Leadership Team has developed the Safety and Health Rules We Live By. This practice highlights the major hazards that take place on construction sites and includes best practices to ensure that all employees practice safe behaviors. Violating any of these rules will result in termination of Black & Veatch professionals or removal of contractor/subcontractor employees from the project. Individuals who violate a Rules We Live By rule are not allowed back on Overland Contracting Inc. projects and are not eligible for re-hire.

1.2 Contractor's Loss Control Responsibilities and Program Requirements

1.2.1 Responsibilities

The Project Loss Control Program is designed to provide consistent loss control efforts during construction. The Project Loss Control Program does not relieve a Contractor of his/her contract responsibilities for safety, health, security, and environment, or for complying with any applicable governmental regulations.

Contractors shall be responsible for the safety and health of all persons, the environment, and property affected by the Contractors' performance of the work, including work performed by their subcontractors. If Contractor brings an additional subcontractor to the project, the Environmental, Safety, Health, and Security (ESH&S) Manager must be notified in advance so that the subcontractor can be approved. The subcontractor that is being proposed shall fill out the Request for Lower-Tiered Subcontractor Usage form (Figure 41) and submit to the Project ESH&S Manager. The Project ESH&S Manager must ensure that this subcontractor's current EMR (Experience Modification Rating) is 1.0 or below, incident rates for the past three years are below the national average, Occupational Safety and Health Administration (OSHA) willful or repeat citations for the previous 5 years are evaluated. According to the contractor's size and scope of work, high volumes of serious or other than serious regulatory citations that create additional risk to Black & Veatch will also be evaluated, as well as any other documentation requested. This requirement shall apply continuously during the entire contract period and shall not be limited just to normal working hours. Contractors shall be responsible for implementation of a written Loss Control Program (Contractors' Loss Control Program) to prevent their employees from working under conditions that are unsanitary or dangerous to their safety and health or to the environment. Contractors' conformance with the requirement to initiate and maintain such a program is mandatory under the provisions of their construction contract.

Contractor shall appoint a qualified and experienced Safety and Health (S&H) Representative who will maintain a current certification from the Board of Certified Safety Professionals or Overland Contracting Inc.-approved equivalent certification in construction safety and/or risk evaluation. Before assigning the S&H Representative to the jobsite, Contractor shall submit the training and experience record for Overland Contracting Inc. review and written approval. The S&H Representative will administer Contractor's Safety, Health, and Accident Prevention Program, attend all safety and health meetings at the jobsite, and, if Overland Contracting Inc. has implemented a Project Safety and Health Program, participate fully in the Project Safety and Health Program. The S&H Representative must have authority to correct unsafe conditions and to stop work in the area of an unsafe condition. This representative shall be appointed as the lead S&H Representative for the Contractor, shall have no other duties, and shall be assigned full-time to the jobsite. Contractor's Company ESH&S Manager shall routinely visit the jobsite.

1.2.2 Program Requirements

Contractors' Loss Control Programs shall meet the minimum applicable requirements of the Occupational Safety and Health Act of 1970 and environmental regulations, as amended. In addition to meeting the minimum requirements of the Project Loss Control Program, the following additional requirements shall be a mandatory part of each Contractor's Loss Control Program:

- Deliver one copy of the Contractor's Loss Control Program to the ESH&S Manager for review.

- Submit to Overland Contracting Inc. as part of the Loss Control Program a Competent Persons Designation form (Figure 1). The Contractors shall designate competent persons for each area listed that is applicable to their work. OSHA defines a competent person as:

  > "One who through training and experience is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them."

  The Contractors' competent persons shall be the competent persons for each lower tier subcontractor unless that lower tier subcontractor identifies an alternate competent person.

- Participate in the weekly construction coordination meetings.
- Cooperate with Overland Contracting Inc., state, federal, and local agencies concerning safety and health and property damage matters.
- Participate in the implementation of fire control measures as may be appropriate for the protection of individuals and property.
- Provide and document training and education to the Contractor's employees in the recognition, avoidance, and prevention of unsafe working conditions and unsafe work practices, and in the implementation of emergency procedures.
- Maintain accurate safety and health records and statistics, and submit to the Project ESH&S Manager by the first of each month the Loss Management Monthly Summary (Figure 2).
- Provide a system for ensuring that reports and documents required by the Project Loss Control Manual are submitted to the Project ESH&S Manager in a timely manner.
- Provide a system for ensuring that safety task assignments (STAs) are held and documented daily for all Contractor employees. A copy of the Safety Task Assignment (Figure 3) must be submitted weekly to the Project ESH&S Manager.
  - STAs shall be prepared by a foreman or designee from his or her crew. All crew members assigned to the task shall participate in the development and review of the STA and shall record their names on the STA prior to commencing work.
  - An STA shall be completed for each task performed. The STA shall be valid until one of the following occurs: (1) end of shift, (2) the crew is assigned a different task, or (3) task conditions change.
  - An STA shall reference the applicable overarching Job Hazard Analyses (JHAs) being referenced by the daily task specific STA.

- The STA shall have the task identified and contain the sequence for (1) performing the task, (2) identifying hazards associated with performing the task, and (3) actions and preventive measures to address each hazard.

- A contractor, general foreman, or superintendent shall initial the STA no later than 2 hours of the start of the task to ensure the STA is in compliance with these requirements. The general foreman or superintendent shall prominently display the STA in the vicinity of the task and shall make the STA immediately available for review throughout the task.

- Provide a system for immediately reporting all injuries, accidents, illnesses, fires, hazardous material spills, environmental incidents, and unsafe conditions and procedures to the Contractor's safety representative or designee and the Project ESH&S Manager.

- Hold and document a system of weekly "toolbox" safety meetings for all Contractor employees. A copy of the Weekly Safety Meeting Report (Figure 4) must be submitted to the Project ESH&S Manager. Weekly toolbox report forms can be obtained from the Project ESH&S Manager.

- A stretch and flex session shall be conducted to prepare workers for the day.

- Establish a system to prevent the use of unsafe or defective equipment, tools, materials, or machinery, which includes procedures for tagging and/or locking out and rendering inoperable such unsafe items.

- Provide a system for ensuring that only employees who are qualified by training or experience are allowed to operate equipment, tools, and machinery. Only qualified and designated personnel shall operate cranes or hoisting equipment. Crane/hoist operators must have current Certified Crane Operator (CCO) certification or equivalent as deemed appropriate by Overland Contracting Inc. and OSHA's 1926 subpart CC.

- Designate a qualified representative to be responsible for rigging and heavy lifting. All hoisting equipment with a capacity of 2,000 pounds (US) or greater shall require trained, certified, qualified operators. A report (lift plan) shall be required prior to all critical lifts. A critical lift is a nonroutine lift/pick that by classification and characteristics requires in-depth and additional planning to ensure safe hoisting execution. All lifts that reach 85 percent of crane capacity or greater shall be sent for review and approved by the BV Crane Specialty group. Lifts shall not be allowed if the lifting device reaches 90 percent of the manufacturer's rated capacity. Deviations must be approved by the Director of ESH&S.

  A critical lift plan shall be developed prior to making a lift when at least one or more of the following criteria is present:

  - Any lift that reaches 75 percent of the hoisting equipment's rated capacity.

  - Any lift in excess of 25 tons, (50,000 pounds).

  - Any lift requiring the use of more than one piece of hoisting equipment including single crane lifts that utilize two hoist drums to manipulate a load.

- Any lift or crane that is within 20 feet of an energized power line.
- Any lift over an occupied building (not applicable during building construction).
- Any lift over moving capital equipment.
- Any lift that involves hoisting personnel.
- Any lift in which the hoisting equipment encroaches on highways, roadways, or railroad rights-of-way, unless the corridor is shut down to traffic.
- Any lift where payloads are required to swing directly over or under energized power lines.
- Helicopter lifts over Federal Aviation Administration defined congested areas.
- Any lift that the crane operator or lift director deems critical.

A Critical Lift Worksheet (Figure 5) shall be submitted to the ESH&S Department for review 24 hours prior to the lift. Appendix B (Cranes and Derricks Procedure) will also be a requirement of this manual.

- Establish a documented hazardous communication program that incorporates the new Globally Harmonized System of classification and labeling of chemicals for the protection of employees who are required to handle or use flammable liquids, gases, toxic materials, poisons, caustics, and other harmful substances. The objectives of the program will be to create an employee awareness of the potential hazards of such substances, the recommended personal hygiene for those exposed to such hazards, the personal protective measures and devices required, and the emergency notification procedures to be used in the event of an accident. The Contractor program shall include the items outlined in Subsection 1.6.5 of this manual.
- Establish a documented program of instruction for employees who are required to enter confined or enclosed spaces. Instructions shall include the nature of the hazards involved, the necessary precautions to be taken, and the proper use of required protective and emergency equipment. The Contractor's program shall include a permit system as outlined in Subsection 1.6.9 of this manual.
- Establish a documented program for protecting employees from occupational health hazards resulting from airborne dusts, mists, vapor, or fumes; noise; and radiation (ionizing and nonionizing), with emphasis on materials such as lead, asbestos, hexavalent chromium, cadmium, arsenic, or silica. A job hazard analysis (JHA) (refer to Subsection 1.6.1) shall be performed to determine the appropriate steps to control the hazard. The Contractor shall use engineering controls wherever possible to eliminate the hazard. If engineering controls are not effective, administrative controls or personal protective equipment (PPE) shall be used.
- Provide a written program for employees who require, because of the hazards of the work being performed, the use of PPE.

- Establish a system (and procedure) that provides for routine, documented inspections of all equipment and tools in accordance with applicable Project federal, state, and local regulations. These procedures, and support documentation, are to be submitted to Overland Contracting Inc. for review upon request. Such equipment and tool inspections include, but are not limited to, the following: mobile equipment, rigging, lever hoists, fall protection, fire extinguishers, ladders, electrical tools, cords, and leads. Forms for documentation of inspections can be obtained from Overland Contracting Inc. NOTE: For the purpose of this manual, routine means monthly, unless otherwise specified.
- Provide a copy of the project tagging procedures to each employee and train all employees to reasonably ensure their understanding of these procedures.
- Provide a written orientation program to include, but not be limited to, the following: job hazard analysis, emergency communication procedures, and disciplinary procedures; Project Loss Control Program requirements; OSHA requirements; and the Project ESH&S requirements. Records of such training shall be maintained on-site by the Contractor and made available upon request for inspection by Overland Contracting Inc.
- Provide written disciplinary procedures equal to or greater than those discussed in Subsection 1.3.2 of this Project Loss Control Manual. This procedure must include enforcement responsibilities of all supervisory personnel.
- Provide appropriate first aid/medical coverage for their employees and submit weekly Project First Aid Logs (Figure 6) to the Project ESH&S Manager.
- If steel erection activities are being performed as described in CFR 1926.750, develop a site-specific steel erection program that meets OSHA Subpart R 1926.750-761 requirements in addition to specific steel erection requirements set forth in this manual (Subsection 1.6.14).
- Develop, document, and implement evacuation/emergency plans for medical emergencies, fire, and hazardous material spills. Contractors' programs shall be in compliance with Overland Contracting Inc. and Project requirements. As part of the Contractor's evacuation/emergency plans, the Contractor will include a comprehensive list of resources and emergency contacts similar to that found on the Resource and Emergency Contact List (Figure 7).
- Develop and implement a Drug and Alcohol Testing Program as required by the contract documents.
- Conduct daily work area safety, health, and environmental inspections with written reports submitted from each foreman weekly to Overland Contracting Inc. Included in the reports shall be deficiencies detected and corrective action taken. Refer to the Work Area Daily Inspection Checklist (Figure 8).
- Develop and implement an Environmental Control Program that is compliant with Section 5.0 of this Project Loss Control Manual and all applicable federal, state, and local environmental regulations.

1.2.3 Drug Testing

Overland Contracting Inc. will enforce strict requirements for a drug free workforce. Failure to require drug and alcohol tests will be considered a breach of contract and could subject the Contractor to expulsion from the jobsite and contract termination. Employees entering, working at, or leaving the jobsite are subject to search and inspection.

Key elements of the Overland Contracting Inc. Drug Screening Policy are as follows:

- Overland Contracting Inc. pre-employment, post accident, reasonable suspicion and random drug tests test for amphetamines, cocaine, marijuana, opiates and phencyclidine and the metabolites – or synthetic counterparts – of these drugs.
- Alcohol testing, with a cut-off level of 0.02 percent is included in all drug tests.
- Overland Contracting Inc. does not recognize the use of medical marijuana, even if state law provides for its use. For anyone who advises Overland Contracting Inc. that they are taking prescription Marinol (and can demonstrate this with a prescription), either prior to or after a non-negative test result, additional testing will be conducted to validate that the presence of THC is because of Marinol and not because of ingesting marijuana.

All Contractor employees shall submit to drug and alcohol screening tests before reporting at the project jobsite or immediately upon reporting to the jobsite. Only employees who are certified drug free and alcohol free shall be permitted by the Contractor to work at the project. (Refer to Figure 9.) This requirement applies to all Contractor employees, including supervisory employees, who are or will be on the project site for more than 3 days. Supplier representatives, home office employees, and field technical representatives who visit the jobsite on a short-term basis are not subject to pre-employment drug testing, although such persons are subject to the search procedures for drugs set forth in this manual.

Preproject Assignment Test

Initial project assignment of any of Contractor's personnel shall be conditional until a preproject assignment drug screening/alcohol test has been passed. The preproject assignment test must be taken by Contractor's personnel within 10 days prior to reporting to project site. Only personnel certified as drug/alcohol free, in accordance with the requirements established herein, shall be permitted by Contractor to work at the project. Manufacturers' representatives, home office employees, and field technical representatives who visit the jobsite on a short-term basis are not subject to drug testing, although such personnel are subject to search and inspection procedures outlined herein. Blood/urine/saliva/breath alcohol testing shall be conducted at the jobsite clinic or a local clinic approved by Purchaser.

Blood/urine/saliva/breath alcohol test analysis shall be performed by a Substance Abuse and Mental Health Services Administration (SAMHSA) certified laboratory for the following drugs: cocaine, opiates, amphetamines, phencyclidine, and marijuana. The levels of acceptance (rejection) for drugs shall be determined based upon SAMHSA guidelines. On-site enzyme immunoassay or colorimetric alcohol saliva screenings are permitted in lieu of laboratory analysis; however, all positive tests shall be confirmed by gas chromatography/mass spectrometry laboratory analysis. Alcohol levels in the blood in excess of 0.02 percent shall be considered unacceptable (positive).

Postemployment Test

Possession, being under the influence, or use of illegal drugs or possession or being under the influence of alcohol at any time while working at the jobsite or on the Project property shall result in Contractor's employee being immediately removed from the jobsite or Project property. Standards for removal of employees due to drug/alcohol levels shall be as defined heretofore for preemployment testing. Upon request by Contractor or Purchaser, Contractor's employee shall submit to a blood/urine/saliva/breath alcohol test. The request will normally be made only if (i) reasonable suspicion exists to believe that Contractor's employee is under the influence or in possession of alcohol, drugs, or other controlled substance, or (ii) Contractor's employee is involved in an accident or situation on the jobsite that results in any injury to the employee or any other individual or results in any property damage.

Periodic Unannounced (Random) Drug Test

Random testing shall be conducted at least once each month. The date of such testing shall be selected using a means that randomly selects the date within the time frame specified, such that the date is unpredictable to the potential subject of the testing. Supervisors at the jobsite shall not be informed of the date of testing and the selected employees shall not be notified until the morning of the selected day.

Possible test subjects shall include all employees present at the jobsite on the day selected for the random testing. Employees to be tested shall be chosen by use of an acceptable means that randomly selects the number of subjects (10 percent) from among the pool of all employees actually at the jobsite. The subjects shall be identified by a unique and individual identification number. The pool of candidates for random selection shall include all employees assigned to the jobsite, including those who have been selected for testing on previous occasions. Thus, an individual could be selected to undergo testing more than one time in any given period.

Drug/Alcohol Test Implementation

If an employee or prospective employee of the Contractor fails to pass a blood/urine/saliva/breath alcohol test, indicating the presence of alcohol or drugs, or if an employee refuses to cooperate in providing a specimen for testing, that employee will be considered ineligible for employment or for continued employment at the jobsite and will be banned or removed from the jobsite for a period of not less than 1 year. Notwithstanding the foregoing, if a banned employee of Contractor has successfully participated and completed a rehabilitation program following banning from the jobsite, the employee shall be considered for (re)hire for the Project. Only rehabilitation programs reviewed and accepted by Overland Contracting Inc. will be considered as approved criteria for (re)hire.

Training and Education

Throughout the construction period, periodic seminars and instruction programs shall be given by the Contractor to Contractor's supervisory personnel (including superintendents and foremen), and other key employees on the recognition of the characteristics, behaviors, detection, and reporting of drugs/alcohol use and employee's fitness for duty. Contractor shall make personnel available for and encourage their participation in these programs.

1.3 Safety and Health Surveillance Policy and Procedures

1.3.1 Surveillance Policy

Contractors are responsible for the enforcement of their respective Contractors' Loss Control Programs, the Project Loss Control Program, and Project ESH&S requirements. Overland Contracting Inc. will provide surveillance of Contractors' activities to observe whether such activities are in compliance with the Project Loss Control Program.

1.3.2 Violation Notification Procedures

If an apparent violation of a safety, health, or environmental standard occurs, Overland Contracting Inc. will advise the Contractor of the violation and direct that the violation be corrected. If there is a conflict between project loss control rules, Contractors' Loss Control Program rules, the Project ESH&S rules, and governmental regulations, the most restrictive shall apply. Contractors shall be informed of the violation by one of the following methods.

1.3.2.1 Safety, Health, and Environmental Violation Notice

The Contractor will be informed of identified violations of safety and health standards by means of a Violation Notice (Contractor) (Figure 10). Violation notices will be delivered by the most expeditious method to the Contractor's on-site construction office. The Contractor will receive an original and one copy of each violation notice.

The Contractor shall take corrective action within the abatement period shown on the violation notice or propose an alternate solution within the abatement period given. If corrective action is not taken within the abatement period, work shall stop in the affected location and/or the affected equipment shall not be used until the cited violation is corrected.

After corrective action has been completed, the Contractor shall state in writing the corrective action taken, date and sign the original notice, and return it to Overland Contracting Inc.

There are four types of violations:

- Serious--Any condition or practice which is causing or likely to cause death or serious physical harm to any person.
- Nonserious--Any condition or practice which is not likely to cause death or serious physical harm to any person.
- Stop Work/Imminent Danger--The existence of any condition or practice which would reasonably be expected to cause death or serious physical harm before such condition or practice can be corrected. This is a "stop work" situation. All persons shall be withdrawn from the affected area, and no one allowed in such area except those people deemed necessary to correct the condition or practice.
- Stop Work/Noncompliance--A violation (serious or nonserious) described in a notice has not been totally corrected within the noted abatement time, and the abatement time should not be extended. This is a "stop work" situation. All persons shall be withdrawn from the affected area, and no one allowed in such area except those people deemed necessary to correct the condition or practice.

1.3.2.2 Imminent Danger Notification

If Overland Contracting Inc. or a Project representative considers a violation to be imminently dangerous to life, limb, or property, the Contractor's representative at that location will be directed to immediately cease work in that area. The imminent danger condition shall be corrected to the satisfaction of Overland Contracting Inc. management and federal, state, and local requirements before work is allowed to continue.

1.3.2.3 Repeated Violations

In addition to the above notification procedures, and/or Overland Contracting Inc. will notify the Contractor's corporate office if a particular violation is repeated or if the Contractor's field supervision is not cooperative. Such notification to the Contractor's corporate office may be either by telephone or in writing; however, telephone notifications will be followed up with written notification.

Repeated nonconformance with the Project Loss Control Program and repeated failure to comply with correction directives may result in removal of Contractor management from the project site or termination of the contract.

1.3.3 Abatement

If the safety and health hazard noted on the Safety, Health, and Environmental Violation Notice is not abated within the time period specified and no acceptable alternate solution has been proposed by the Contractor, Overland Contracting Inc. will initiate steps to correct the violation and back charge such expenses to the Contractor.

1.3.4 Notice to Company of Safety and Health Violation

Contractors who knowingly violate the project's loss control rules will be issued a Violation Notice (Contractor) (Figure 10). A company that knowingly or willfully violates project loss control rules shall be subject to discharge.

1.3.5 Tagging Equipment Out of Service

The procedures for tagging defective equipment, tools, or cords out of service at the project shall be strictly adhered to. If a safety and health hazard is recognized by Overland Contracting Inc. or a Project representative, the affected equipment will be tagged with a "Danger" tag (Figure 11), immediately taken out of service, and remain out of service until the defect is corrected.

The "Danger" tag shall be removed from the equipment by the Contractor's representative after corrective action has been completed. The Contractor shall state in writing on the tag the corrective action taken, date and sign the tag, and return it to Overland Contracting Inc. Anyone removing this tag before corrective action has been completed shall be subject to immediate discharge from the project.

1.4 Project Loss Control Program Operation

1.4.1 Project Loss Control Manual

Overland Contracting Inc. will distribute copies of the Project Loss Control Manual to all Contractors. The Contractors shall ensure that all their employees and subcontractors are familiar with, and abide by, the contents of this manual, including any changes distributed by Overland Contracting Inc.

1.4.2 Project Construction Coordination Meetings

Overland Contracting Inc. will schedule project construction coordination meetings weekly and at any other time deemed necessary. The purpose of the meetings, among other things, will be to discuss safety and health concerns as they relate to the project, provide for two-way communication between Contractors' safety representatives and Overland Contracting Inc. and, in general, further the Project Loss Control Program. All Contractors are required to have their safety representative in attendance. Appropriate personnel will be required to attend additional meetings such as Safety Walkdowns, Environmental Meetings, Safety Managers' meetings, Joint Craft Management Safety Representative meetings and others as determined by the Field ESH&S Manager.

1.4.3 Injury/Illness and Near-Miss/Property Damage Reporting

Immediately after they happen, all injuries, occupational illnesses, near misses, and property damage accidents shall be reported to Overland Contracting Inc. and investigated by the Contractor's safety representative. The safety representative shall complete and submit to Overland Contracting Inc. a Preliminary Accident/Illness Incident Investigation form (Figure 12) within 24 hours. An Injury/Illness Incident Investigation form (Figure 13) and/or Near Miss/Property Damage Incident Investigation form (Figure 14) shall be completed and submitted to Overland Contracting Inc. along with all supportive information such as photographs, witness statements, etc., within 2 working days after the accident happens. Reports shall be dated and signed by the Contractor's project manager.

If a serious injury (refer to definition below), fatality, property damage, accident, or any damaging fire occurs, Overland Contracting Inc. shall be immediately notified regardless of the day or hour. This reporting requirement is in addition to the requirements outlined in the above paragraph. A serious injury is defined as any injury that requires medical treatment beyond first aid (as defined by OSHA in the publication "Recordkeeping Guidelines for Occupational Injuries and Illnesses"), any trip to the hospital or doctor's office, or any single incident where three or more employees are injured.

Incident reporting and associated investigations include the following:

- All injuries and illnesses to personnel that occur on the Project.
- All injuries and illnesses involving the general public as a result of activities associated with the Project.
- All equipment and property damage incidents on the Project.
- All "near-miss" incidents on the Project.

A drug and alcohol test shall be administered to personnel injured and/or any personnel in a work crew involved in an incident involving personal injury. Drug and alcohol testing may also be required for "near-miss" incidents at the discretion of the Project ESH&S Manager.

1.4.4 Return-to-Work Program

Every effort shall be made to **return workers to meaningful work** after a work-related injury or illness, under the direction of the physician. Contractors shall also be aware of the worker's status and assist in managing the return-to-work program.

The Contractors shall participate in the return-to-work program.

When Contractor workers report a work-related illness or injury, immediate notice shall be provided to Overland Contracting Inc. and the Contractor employee shall be taken to the approved medical facility for examination and/or treatment. If the doctor determines that the worker qualifies for "Return to Work" ("restricted-duty"), the doctor will complete appropriate forms indicating the restrictions and conditions for transitional work. The Contractor shall provide modified work until its employee is able to resume regular duties. All modified work is temporary in nature and is designed to facilitate a return to regular duties as soon as possible. Modified duty positions may be offered at any location of the Project or on any shift. Modified work can also be provided at other work locations of the Contractor with approval from Overland Contracting Inc.

In no case shall an injured worker be laid off or terminated from an "alternative work" position unless first discussed with Overland Contracting Inc.

1.4.5 Government Agency Inspection Procedures

Overland Contracting Inc. Project Management shall be notified immediately of the presence of a government agency inspection official on the site.

A representative from Overland Contracting Inc. may accompany the government agency inspection official during inspections of the construction site. Also, each Contractor will require his employees to select a representative(s) to accompany the government agency inspection official officer during site inspections.

Overland Contracting Inc. shall examine the government agency inspection official's credentials prior to the start of any on-site inspection. At all times while on-site, the government agency inspection official shall be treated courteously and given full cooperation.

Contractor agrees that, in the event of any violation of EHS laws arising from Contractor's and/or Contractor's employees' action or failure to act, Contractor shall take immediate action to resolve the violation with the appropriate regulatory authority; pay any and all fines, penalties, or other costs that are levied by a regulatory authority; and reimburse to Overland Contracting Inc. and the Project all directly related and documented costs expended to resolve the violation.

1.4.6 Employee Involvement Process

An effective employee involvement process begins with managers, supervisors, and foreman. The process must be encouraged at every level. Every employee, including craft, staff, and management will have a role to participate in this process. After training, craft employees will do regular reviews in the field with their peers. Supervisors shall perform daily supervisor safety checks

focusing on both employee actions and site conditions. Safety professionals shall perform daily safety checks focusing on both employee actions and site conditions. The employee involvement observation process will be implemented upon project start. The process is intended to promote safe actions and reduce the occurrence of at-risk actions by addressing such actions through direct observation, feedback, and positive interaction. A safety committee shall be established to manage the process and shall consist of field employees and a facilitator. This committee will be maintained throughout the project. A rotation schedule will be established to ensure a proper turnover in the committee. A facilitator shall be assigned to help ensure the process remains visibly active. This person shall communicate the top at-risk and other essential information on a weekly basis. This process is nonpunitive, that is, no name-no blame. The intent of the process will be discussed during each session of the orientation. Information on becoming an active member of the safety committee will also be communicated. The committee shall develop a unique team name and logo.

Results of the reviews shall be communicated to all employees on the project by a series of reports, bulletins or other types of communication. The facilitator shall review the observation data and report to the committee and to the site teams. Facilitator shall receive train the trainer knowledge to educate new reviewers, supervisors and managers. Facilitator shall ensure all supervisors and managers have received training in the employee involvement process. Summary reports and graphs shall be distributed during the weekly meeting. This data shall be reviewed and trends addressed by the committee. Reports shall be distributed to each Manager, Superintendent, General Foreman and Foreman for their review. A plan of action to address any identified trends shall be developed. Trends can be both positive (recognition opportunities) and opportunities to improve (corrective actions).

The Project Field Manager/Construction Manager and ESH&S Manager shall review and provide the necessary support to facilitate implementation of the recommendations from the committee. Each supervisor and General Foreman shall make arrangements for employees involved in the process to receive necessary time and cooperation to perform reviews and attend committee meetings if on the committee. In addition, it is the supervisor's responsibility to review the observation data with their employees at least weekly along with performing supervisor safety checks. It is understood that the Project Field Manager and Construction Manager must maintain total involvement and champion the process. There active involvement will ensure an effective program.

1.4.7 People Matter Most

The project shall implement and maintain facilitated People Matter Most (PMM) sessions for all personnel assigned to the project. This requirement applies to all projects involving craft personnel whether direct hire, subcontractor, and/or partners.

Project and teams must plan, budget, and schedule for PMM implementation throughout the project. This should be included in the project execution and financial plans. The project-specific implementation plan will be sent to the PMM Executive Sponsor.

The Project Manager shall ensure that PMM sessions are scheduled and budgeted on each project.

PMM session attendance shall be tracked in TRA (IndustrySafe). The Site Safety Manager or designee shall be responsible for this activity. Subcontractor and/or partner personnel will be tracked by subcontractor and reported to the Project ESH&S Manager on a monthly basis.

The length of the session is 3 hours.

All employees and contractors on a project shall be trained within 1 month of assignment to the project unless approved by the Project Field Manager.

PMM sessions shall not be scheduled on the first day of an employee's arrival and/or during orientation. They shall remain as stand-alone sessions to emphasize their importance.

Only approved facilitators shall conduct these sessions. To be "approved," managers shall work with an existing facilitator for several sessions, be observed, and then be approved or not. Site safety personnel shall not conduct the training without prior approval from the PMM Executive Sponsor.

Facilitators are expected to be senior level leaders, preferably the Project Field Manager or Construction Manager on a project (the most senior full-time manager on the project who has the ability to facilitate successfully). As approved by the PMM Executive Sponsor, other employees may facilitate sessions as long as they are properly qualified and trained to do so.

1.5 Fire Protection

1.5.1 Responsibilities

Each Contractor shall be responsible for the following:

- Providing adequate fire protection throughout all phases of construction as required by the National Fire Protection Code and OSHA Standard 29 CFR 1926 Subpart F.
- Using work procedures that minimize fire hazards to the greatest extent practical.
- Collecting and removing combustible debris and waste materials from the jobsite each day.
- Storing fuels, solvents, and other volatile or flammable materials in an area designated by Black & Veatch.
- Maintaining good housekeeping in storage area.
- Providing for attendance during the use of temporary heating facilities.

Failure of Contractor to comply with, or of Black & Veatch to enforce, fire protection requirements shall not relieve Contractor from any responsibility or obligation under this subcontract.

1.5.2 Combustible Covers

Unless otherwise specified, untreated canvas, paper, plastic, and other combustible flexible materials must not be used inside buildings.

If such materials are on equipment or materials that arrive at the project site, they must be removed and replaced with an acceptable covering before the equipment or material is stored or moved into the construction area.

Formwork, scaffolding, planking, and similar materials that are combustible but that are essential to execution of the work, shall be treated for fire resistance or otherwise protected against combustion resulting from welding sparks, cutting flames, and similar fire sources.

Acceptable flexible materials for covering shall be waterproof and flame resistant.

1.5.3 Storage of Flammable Liquids

Storage of flammable liquids or gases must be in areas designated by Black & Veatch.

Temporary storage of flammable liquids or gases inside buildings is allowed only if the materials are necessary for construction, and all materials are removed from inside the building at the end of the day.

Flammable liquids must be inventoried in accordance with Subsection 5.2.1.7, Inventory.

1.5.4 Use of Flammable Liquids

Flammable liquids (Category 1, 2, or 3) must be kept in closed containers when not actually in use.

Flammable liquids (Category 1, 2, or 3) may be used only where there are no open flames or other sources of ignition within 50 feet of the operation.

Transferring flammable liquids greater than 5 gallons must be separated from other operations by at least 25 feet or a 1 hour fire resistance rating wall.

Containers must be electrically interconnected (bonded) when transferring flammable liquids (Category 1, 2, or 3) from one container to another.

1.5.5 Fire Protection Equipment

Contractor must provide adequate fire protection equipment in each warehouse, office, and other temporary structures, and in each work area being occupied.

Access to sources of fire water must be identified and kept open at all times.

Suitable fire extinguishers must be provided in enclosed areas, in areas that are not accessible to fire water, or in areas that may be exposed to fire that cannot be safely extinguished with water.

Fire extinguishers must be maintained and inspected on a regular basis. Refer to the Fire Extinguisher Inspection Log (Figure 15).

Each fire extinguisher must be of a type suitable for extinguishing fires that might occur in the area in which it is located.

In areas where more than one type of fire might occur, the type of fire extinguisher required in each case must be provided.

Each extinguisher must be securely placed and maintained in a convenient, clearly identified location for accessibility in the event of fire.

1.5.6 Reporting Fires

All fires, regardless of size, must be reported immediately to Black & Veatch.

In the event of a fire that cannot be locally controlled by fire extinguishers, the Contractor must follow the emergency procedures outlined in Section 2.0.

1.5.7 Wildfire Prevention

Fire prevention controls must be considered and defined based on the hazard assessment taking into account local regulations. Forest fire prevention may include many elements that address the use of open flames (hot work), mechanical equipment (hot engine blocks), fuel management and storage, fire extinguishing equipment and fire fighting procedures and vegetation buffer zones.

In areas where drought conditions exist, work operations must be planned and countermeasures put in place to address fire hazards. Projects are to address these via the hazard assessment(s) and must place daily emphasis on prevention and controls via the Safety Task Assignment (STA) process.

In forest areas, governing fire prevention rules and practices must be understood, built into the hazard assessment and followed. Warning flags are often used by the Forest Service that detail the fire threat level. When working in these areas, consistent coordination with the Forest Service or equivalent governing body must be maintained and full compliance with fire prevention techniques and procedures must be maintained. In areas of drought, or work locations where fire hazards may impact the public or property are present, projects must inact fire prevention practices commensurate with the hazards present.

When we are working in an area that the potential to start a wildfire is present, we must take all precautions possible to prevent causing a wildfire. We must use non-hotwork methods to perform the task in remote areas where the danger of wildfire exists.

The methods include, but are not limited to the use of mechanical sheers, a portaband saw, or other similar tools/methods.

When alternative methods are not viable, due to uncontrolled circumstances such as very remote terrain, impeded access for equipment, etc. we must make sure a safe prevention plan is in place.

The plan must include all the following precautions:

- Utilize Welding, Cutting, and Heating Permit (SAF-079).
- Remove all combustable substances that can be relocated, such as cardboard storage boxes, gas cans, pallets, etc.
- Where possible remove any accumulations of grass, wood/twigs, and brush, including potentially cutting/raking vegetation from the area to limit the potential for fire.
- Wet the area for a minimum of 35’ around the point of hot work with water utilizing such equipment as a water buffalo or equivalent.
  - Note: Are may need to be larger based on environmental factors such as higher wind speeds, gravity/grade considerations, etc.

- Cover the ground and any irremovable vegetation in the immediate area with fire/welding blankets.
- Have fire extinguishing methods immediately available, such as fire extinguishers or water cans/source.
- Have a trained fire watch onsite during entire hot work and for a minimum of 1 hour following the end of the hot work task.
  - Note: May need to be longer then 1 hour depending on the location and terrain.
- Any other site specific required precautions that must be taken.

Other best practices to consider:

- Do not perform hotwork operations on a “high risk” day as indicated by local government.
- Conduct operation during or immediately after a rain event to ensure area is properly saturated.
- Conduct operations at the early in the shift so people are in the area for the rest of the day to ensure there isn’t any complications that arise from the hot work.

1.5.8 Project Wildfire Safe Zones

On projects where there is a potential for wildfires, safe zones must be established around the jobsite. Considerations, as applicable, include:

- Fire-safe construction. Substitute non-combustible or fire-resistant materials when possible.
- Landscaping and vegetation. Create a clear zone 30 feet around your building or office structures in all directions – farther on a downhill slope, because fire can move extremely quickly uphill. Remove all combustibles from this zone, including wood fencing, stacked pallets, and other combustible materials. For another 100 feet beyond that, reduce the amount of flammable vegetation as much as possible.
- On-site water supply. Make sure that your on-site water supply is adequate to control small fires until professional firefighters can get to you. Ensure only trained and designated employees perform firefighting functions.
- Wildfire-fighting tools. Rakes, buckets, saws, shovels, and axes can control fires that are just starting. Ensure only trained and designated employees perform these actions.
- High-risk activities. During wildfire season, be cautious when welding, burning, or performing activities that have the potential to spark a wildfire.
- Implement a no-smoking policy in all areas of the site.

- If your site has special issues, such as radioactive materials or large-quantity storage of flammable or hazardous chemicals, or if your site includes large tracts of undeveloped land, then contact the local fire department to develop a customized wildfire response plan.

When work must progress in areas affected by nearby wildfires or where work will take place in an area where the potential for wildfire is possible (for example, within a "wildland urban interface" [a spot that borders an undeveloped, forested, or wild area]) you must be prepared and develop a wildfire evacuation plan. A wildfire evacuation plan can help avoid confusion and prevent injuries. A thorough wildfire evacuation plan must include:

- Conditions that will activate the plan.
- Chain of command.
- Emergency functions and who will perform them.
- Specific evacuation procedures, including routes and exits.
- Procedures for accounting for personnel, customers and visitors.
- Equipment for personnel.
- Review the plan with workers.

1.5.9 Air Quality Index (AQI)

The degree of hazard from the wildfire smoke can be assessed by using a measure known as the Air Quality Index (AQI). Normally the AQIs range from 0 to 500 and are separated into four or five categories that progress from no risk to the general population, unhealthy for members of sensitive groups (MSG), unhealthy for the general population, and finally to hazardous to the entire population. Using that progressive approach of the AQI, controls are required at each level that builds on the protection provided by previous levels. The AQI for a specific area can be accessed via websites like AirNow.gov.

Contractors are to monitor AQI conditions, identify MSG personnel, and protect their employees from the harmful effects of wildfire smoke.

1.6 Specific Requirements

1.6.1 Job Hazard Assessment (JHA) Policy

1.6.1.1 Requirement

Contractors shall conduct a job hazard assessment (JHA) on all major work operations, work operations that are particularly hazardous by nature, and those operations requiring special planning. Failure to provide a JHA will result in work stoppage or unnecessary delays until completed. The following list of general activities can be used as a guide to help determine when a JHA is required. This list is not meant to be all-inclusive:

- Excavation and trenching operations.
- Blasting.

- Pile driving and drilled pier installation.
- Foundation construction.
- Concrete work.
- Structural steel erection.
- Roofing and decking work.
- Tower construction.
- Transmission line construction.
- Tank, vault, basin, and vessel construction.
- Building construction.
- Metal wall panel and precast panel installation.
- Mechanical equipment installation.
- Electrical equipment installation.
- Insulation work.
- Painting, coating, and lining operations.
- Heavy rigging and lifting operations.
- Chemical cleaning activities.
- Pressure testing.
- Startup and commissioning activities.
- Cofferdam installation.
- Tunneling operations.
- Hazardous waste remediation.
- Work in roadways.
- Confined space work.
- Occupational health hazards.

1.6.1.2 Personnel

Before the start of a work operation that requires a JHA, the appropriate people shall be assembled. The people needed to complete a JHA shall be dependent on the complexity of the work operation being evaluated. As applicable, persons shall be included who have knowledge in the following areas; but, as a minimum, at least one management and one craft employee shall be involved in the process:

- Hazards associated with the work operation.
- Knowledge on the equipment and tools needed to safely perform the work.
- Procedures to perform the work.
- Applicable OSHA standards.
- Project Safety and Health Program requirements.
- Chemicals and processes involved.

1.6.1.3 Procedure

The Job Hazard Analysis Risk Assessment form (Figure 16) is divided into three areas: Sequence of Job; Potential Hazards; and Recommended Action, Procedure, and/or Equipment. The following shall be considered when completing each section:

- Sequence of Job--The job shall be broken down into manageable steps with enough detail to adequately cover the task being evaluated. For example, steel erection can be broken down into several tasks such as steel delivery, offloading, staging, anchor bolt installation, column erection, beam installation, fill-in steel, bolt up, stairs and handrail, grating, etc. These major sections can be broken down into manageable subsections; for example, offloading can be further broken down into the following categories--positioning the truck, setting up the crane, selecting the appropriate rigging, rigging the steel, swinging the load, unhooking the rigging, etc.
- Potential Hazards--For each task identified in the Sequence of Job section of the JHA form, the hazards associated with the task shall be identified. Typically, each task will have more than one potential hazard listed; for example, hazards created while "positioning the truck" from the example described above would include the load shifting and crushing employees; the truck backing over workers; situating the truck under an overhead power line, causing a potential electrical hazard; the truck hitting and damaging other equipment and structures, etc.
- Recommended Action, Procedure, and/or Equipment--For each hazard identified in the Potential Hazards section of the JHA form, a way to eliminate the hazard shall be described in this section. Emphasis should be placed on time, material, equipment, training, and procedures. For example, the hazard listed in the above example, "the truck backing over workers," could be eliminated by the following: ensuring that all trucks are equipped with a backup alarm, assigning someone to act as a signal person (that person will need to be trained), requiring the signal person to wear an orange reflectorized vest, etc. If the hazard/risk cannot be completely eliminated, the hazard/risk shall be mitigated as much as possible.

Upon completion of the JHA, but before the start of the work operation, the Contractor shall submit the JHA to Overland Contracting Inc. for review. Overland Contracting Inc. shall have at least 48 hours to review and comment on the JHA.

Upon review by Overland Contracting Inc., the Contractor shall use the form to ensure that the elements listed are in place before the start of the work operation. The Contractor shall also use the form as a training tool to ensure that each employee involved in the work operation is adequately trained on each element of the JHA.

If a situation arises during the work operation that has not been addressed by the JHA, or if a situation occurs that requires an existing element of the JHA to be modified, the Contractor shall modify the JHA as appropriate to address the issue. The Contractor shall ensure that affected employees are trained on any changes or additions made to the JHA.

The Contractor shall periodically (no more than 3 months) review the JHA to ensure that it is accurate and that the JHA is effective in controlling the identified hazard/risk. This review shall be documented and evidence of review shall be provided to the Project ESH&S Manager upon request.

Project execution plans shall be followed as written for the duration of project. Deviation from the plan will require an in-depth hazard analysis with an explanation of how safe work practices will be achieved. Additionally, an explanation of why the deviation from the plan is required. The plan needs to be submitted to the Business Unit Construction Safety Manager for approval prior to work proceeding.

1.6.2 Housekeeping

Contractors shall, at all times, maintain the premises free from accumulations of waste material, trash, and debris caused by their work.

Pre-job planning shall include consideration of housekeeping plans and will also include methods and necessary equipment or tools. The Contractors shall instruct their supervisors to maintain good housekeeping.

Each work area shall be cleaned and swept daily, if applicable, by the Contractor or as often as necessary to remove fire and safety hazards discovered through regularly scheduled inspections. All tools, scaffolding, and materials shall be removed from the work area at the completion of the work. All scrap, waste material, and rubbish shall be removed from the work area daily.

All hoses, cables, extension cords, materials, and supplies shall be located, arranged, and grouped so that they will not block any accessways and will permit easy cleaning and maintenance. At the close of each work week, and at the close of each day preceding a holiday, to the extent practical, all such items that have not been used during the work week, shall be removed from the construction area and stored in Contractor's storage areas. Promptly upon the completion of the construction work in an area, all scrap, trash, waste materials, and debris resulting from the Work under this Subcontract shall be deposited in Contractor-provided waste facilities.

Refusal to maintain or negligence in maintaining good housekeeping can result in the following:

- Back charges to the Contractor for removal of trash, rubbish, and waste materials from the work area and also for clearing aisles; walkways; and work areas of tools, material, and equipment.
- Suspension of the work until a proper level of housekeeping is achieved, as deemed necessary by Overland Contracting Inc.

All recommendations for improved housekeeping from the Overland Contracting Inc. or Project representative shall be acted upon immediately by the Contractor in violation.

1.6.3 Ground Fault Protection

Ground fault circuit interrupters (GFCIs) shall be used with all power tools and cords. These shall be used regardless of the power source, including portable and wheel mounted generators. The GFCI shall be placed at the power source and tested before each use. Refer to GFCI Testing Log (Figure 17).

1.6.4 Crane and Articulating Boom Work Platform Inspections

Each day, before use of any crane, the operator shall perform and document a daily crane inspection to ensure that the equipment is in good working condition. These inspections are to be made available upon request in the field and are to be submitted to Overland Contracting Inc. at the end of each week. The documents are to be submitted for each crane and are to be in chronological order by date. This daily inspection protocol is also required for all articulating boom work platforms ("JLGs," "Genie Lifts," etc.). Contractors may use their own daily inspection forms for these pieces of equipment upon approval from the Project ESH&S Manager.

All cranes in use on the project shall be inspected on a monthly basis by a competent person. Inspection results shall be recorded on a Crane Monthly Inspection form (Figure 18), which must be submitted to Overland Contracting Inc. by the fifth working day of each month. Inspection report forms can be obtained from Overland Contracting Inc. Contractors may use their own report form as long as the form contains the same information contained in Figure 18.

Additionally, the Contractor shall submit a current annual inspection report to Overland Contracting Inc. for each crane used on the project. Annual crane inspection reports shall be submitted before the crane is placed in service. The annual inspection shall be performed by an accredited licensed crane inspector.

Failure to submit the above inspection reports will result in a violation notice, which will stop the use of the crane in violation until the required report(s) are submitted. Anyone knowingly making any false statement, representation, or certification in either a monthly or an annual crane inspection report shall be subject to immediate discharge and will be barred from the project.

The above policy shall in no way eliminate any requirements for crane inspections set forth in the OSHA Standard 1926 N- Helicopters, Hoist, Elevators, and Conveyors or 1926 Subpart CC- Cranes and Derricks in Construction.

Only qualified and designated personnel shall operate cranes or hoisting equipment. All hoisting equipment with a capacity of 2,000 pounds (US) or greater shall require trained, certified, qualified operators. Crane/hoist operators must have current Certified Crane Operator (CCO) certification or equivalent as deemed appropriate by Overland Contracting Inc. and OSHA's 1926 subpart CC.

A report (lift plan) shall be required prior to all critical lifts. A report (lift plan) shall be required prior to all critical lifts. A critical lift is a nonroutine lift/pick that by classification and characteristics requires in-depth and additional planning to ensure safe hoisting execution. All lifts that reach 85 percent of crane capacity or greater shall be sent for review and approved by the BV Crane Specialty group. Lifts shall not be allowed if the lifting device reaches 90 percent of the manufacturer's rated capacity. Deviations must be approved by the Director of ESH&S.

A critical lift plan shall be developed prior to making a lift when at least one or more of the following criteria is present:

- Any lift that reaches 75 percent of the hoisting equipment's rated capacity.
- Any lift in excess of 25 tons, (50,000 pounds).
- Any lift requiring the use of more than one piece of hoisting equipment including single crane lifts that utilize two hoist drums to manipulate a load.
- Any lift or crane that is within 20 feet of an energized power line.
- Any lift over an occupied building (not applicable during building construction).
- Any lift over moving capital equipment.
- Any lift that involves hoisting personnel.
- Any lift in which the hoisting equipment encroaches on highways, roadways, or railroad rights-of-way, unless the corridor is shut down to traffic.
- Any lift where payloads are required to swing directly over or under energized power lines.
- Helicopter lifts over Federal Aviation Administration defined congested areas.
- Any lift that the crane operator or lift director deems critical.

A critical lift report shall be submitted to the ESH&S Loss Control Department for review 24 hours prior to the lift. Appendix B (Cranes and Derricks Procedure) will also be a requirement of this manual.

1.6.5 Hazardous Material Program

It is solely the Contractor's responsibility to implement and maintain a written Hazard Communication Program that will comply with the Globally Harmonized System for Classification and Labeling of Chemicals as stated in OSHA Standard 29 CFR 1910.1200. Contractors shall submit a copy of their written Hazard Communication Program to Overland Contracting Inc. before they begin work on-site.

Contractors shall submit a Safety Data Sheet (SDS) to Overland Contracting Inc. for any and all hazardous material they bring on-site or for which they are responsible. The SDS shall be submitted before the material arrives on-site and be the most current available.

If a Contractor's work with a hazardous material could affect the safety and health of other Contractors' employees, the Contractor shall coordinate the work with the other Contractors to ensure the safety and health of the Contractors' employees.

Contractors shall be responsible for the safe storage, use, and disposal of all hazardous material they bring on-site, or for which they are responsible.

Black & Veatch will follow the following industry accepted colors to identify hazardous materials on-site:

Yellow	Flammable liquids
Red	Paints, inks, and other combustible liquids

Blue	Corrosives and hazardous liquids
Green	Pesticides and insecticides
Silver or Neutral Colors	Laboratories
White	Waste

1.6.6 Labeling

All containers of hazardous chemicals used, stored, or transported at the workplace must be labeled. Chemical manufacturers, importers, and distributors must provide labels, tags, or other markings for containers of hazardous materials. This identification includes the following information:

- Product identity.
- Supplier identity.
- Chemical identity.
- Signal words.
- Hazard pictograms.
- Hazard statements.
- Precautionary statements.

If a Contractor notices that an improperly labeled container is present in its work area (or that the label is illegible), action must be taken immediately to appropriately relabel the container. The Site Safety Manager is responsible for providing guidance to employees regarding chemical labeling.

If a hazardous material is transferred to a secondary container, it must be labeled with the same requirements as the original container.

In addition to the manufacturers' labels, the Contractor may utilize the National Fire Protection Association (NFPA) 704 diamond for stationary tanks.

1.6.7 On-Site Storage and Dispensing of Flammable and Combustible Liquids

The Contractor shall strictly adhere to the applicable sections of 29 CFR, Parts 1926.152 and 1926.153, Safety and Health Regulations for Construction, of the Occupational Safety and Health Act.

Refer to Project Combustible and Flammable Material Storage Requirements (Figure 19) for general guidelines on the design and setup of a fuel storage area.

The location of outdoor storage tanks must be designated by Black & Veatch.

All chemical storage areas shall be inspected on a monthly basis. Refer to the Chemical Storage Area Inspection Log (Figure 20).

1.6.8 Fall Protection

The Contractors shall strictly adhere to the OSHA Fall Protection Standard 29 CFR 1926 Subpart M. No person or work operation is exempt from the standard on this project. This includes structural steel erection operations, structural steel connectors, and scaffold erectors. Fall protection is required 100 percent of the time as follows, whether employees are climbing, traveling, or working. NO WORK OPERATION is exempt from the 6 foot fall protection requirement:

- Fall Protection Plan--Before starting work operations that require fall protection, the Contractor shall submit a fall protection plan to Overland Contracting Inc. The fall protection plan shall include, but not be limited to, the following:
  - Name of qualified person in charge of the operation.
  - Description of work operation.
  - List of fall exposures.
  - Description of fall protection methods used to eliminate the fall exposures.
  - Training and enforcement methods used to ensure employee compliance with the plan.

    Note: Refer to 29 CFR 1926 Subpart M, Fall Protection Standards.
- Body Harnesses, Lanyards, and Lifelines--Body harnesses, lanyards, and lifelines shall be used in accordance with OSHA Standard 1926.502 (d) and ANSI 359, with the following exceptions:
  - Full body harnesses shall be used in lieu of safety belts on this project.
  - Only lanyards with shock absorbers and locking type snap hooks shall be used.
  - At least two lanyards shall be used to provide 100 percent fall protection when employees are moving around obstructions, connection points, or other similar items.
- Guardrail Systems--Guardrail systems and their use shall comply with OSHA Standard 1926.502 (b), with the following exception:
  - Manila, plastic, or synthetic rope shall not be used as guardrails on this project because of the requirements set forth in OSHA Standard 1926.502(B)(4).
- Training--The Contractor shall provide a training program as follows for each employee who might be exposed to fall hazards:
  - The training program shall be taught by a competent person and shall meet the requirements specified in 29 CFR 1926.503.

1.6.9 Scaffold Tagging Procedures

1.6.9.1 Intent

The intent of the scaffold tagging procedure is to provide personnel with a scaffold that is complete and constructed in accordance with Project Loss Control Program rules and OSHA regulations. If there is a conflict between Project Loss Control Program rules, the Contractor's Loss Control Program rules, and governmental regulations, the most restrictive shall apply.

1.6.9.2 Compliance

It is the policy of Overland Contracting Inc. that all on-site personnel shall comply with this scaffold tagging procedure. Scaffolds not displaying a signed scaffold tag shall not be used.

In addition to the procedures contained in this scaffold tagging procedure, all employees are subject to the OSHA scaffold requirements contained in 29 CFR 1926.451.

1.6.9.3 Contractors' Requirements

Contractors are responsible for ensuring that their subcontractors tag their scaffolds in accordance with the project scaffolding tagging policy.

1.6.9.4 Procedure

Project Scaffold Tags (Figure 21) shall be provided by the Contractor and shall conform to the following color codes and wording.

All scaffolds shall be marked with one of the following tags (Figure 21):

- Green Tag--This scaffold was built to meet OSHA scaffold regulations; it is safe to use.
- Yellow Tag--This scaffold does not completely meet OSHA scaffold regulations; workers must follow the specific instructions listed on the scaffold tag. This might mean that safety harnesses shall be worn or that there is a hazard on the scaffold that the work must be made aware of.
- Red Tag--Warning--This scaffold is not complete; DO NOT USE.

A competent person designated by the Contractor who constructed the scaffold shall inspect the scaffold for compliance with project and OSHA requirements (1926.451), and shall sign his/her name to the tag before allowing anyone to access the scaffold. This shall be accomplished by a competent person before each shift.

When scaffolding is initially erected, an evaluation of the scaffold location and intended use must be completed for the protection of others working below. Where a potential exists for objects to fall through the guardrails of the scaffold to a lower level, netting, screening, paneling or sheeting, as appropriate, must be secured on the inside of the scaffold guardrails. The material must remain in place and be maintained while the potential for falling objects exists.

All scaffolds that cannot be equipped with standard top rail, midrail, and toeboard because of interferences with structures or equipment shall be marked with a yellow tag stating that personal fall protection is required.

Scaffolds that are being constructed, torn down, or that are incomplete shall be marked with a red tag.

1.6.9.5 Responsibilities

The foreman who constructs the scaffold or has the scaffold constructed is responsible for ensuring that the scaffold is built to project and OSHA standards.

Contractor personnel shall periodically monitor all scaffolds. The auditing shall ensure that all scaffolds are properly tagged and in compliance with project and OSHA standards.

If a foreman wishes to use another Contractor's or crew's scaffold, the foreman shall obtain permission to use the scaffold and shall inspect and tag the scaffold before use.

Any employee working from a scaffold that does not have a scaffold tag, or any supervisor assigning employees to work on an untagged scaffold, shall be subject to disciplinary action as outlined in Subsection 1.3.4, Notice to Company of Safety and Health Violation, of this Project Loss Control Manual.

1.6.10 Confined Space Entry Procedure

1.6.10.1 Hazard Assessment

Any time employees are at risk from their work or work environment, the confined space competent person must assess the hazards in accordance with the Hazard Assessment procedure, select means and methods to effectively control the risk, and train employees in the effective execution of these controls before work begins and when changes occur that may increase the risk to employees. A confined space is defined as follows:

1. Any area that has limited means of ingress or egress, and
2. Is not designed for continuous employee occupancy, and
3. Is large enough for an employee to bodily enter.

The hazard assessment must be documented on the Confined Space Entry Hazard Assessment (Figure 43) and made readily available to the affected employee(s) and supervisor(s).

1.6.10.2 General Requirements for Confined Spaces

The confined space competent person must identify all confined spaces where employees may work.

The competent person must assess the characteristics and potential hazards of the confined space by completing the Confined Space Hazard Assessment form.

A Confined Space Entry Permit (Figure 22) (refer to Subsection 1.6.9.5) is available through the confined space competent person.

Before an employee enters any confined space, the internal atmosphere must be tested in accordance with Subsection 1.6.9.4, Atmospheric Monitoring.

Any conditions making it unsafe to remove an entrance cover must be eliminated before the cover is removed.

When entrance covers are removed, the opening must be immediately guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and protect each employee working in the space from foreign objects entering the space.

To prevent the latching of self-locking doors or hatches while employees are working inside, latching or locking devices must be made inoperative before employees enter a confined space.

Employees must be provided a safe method of entering and exiting the confined space.

If the confined space is entered by a ladder, the ladder must remain in place and must be fastened in a firm position while employees are inside the confined space.

Personnel hoisting systems must be used in accordance with the manufacturer's design and intent. Any job-made hoisting systems must be approved in writing by a registered professional engineer.

Compressed gas bottles must not be allowed in a confined space.

All electrical equipment used must be properly grounded, battery operated, or low voltage.

No work activities that cause or produce open flames, such as welding, must be performed without a Welding, Cutting, and Heating Permit (Figure 24).

If a potential serious hazard is detected during entry into any confined space, the following restrictions apply:

- All employees must leave the space immediately.
- The space must be evaluated to determine how the hazard developed.
- The contractor must implement measures to protect employees from the hazard before any subsequent entry takes place.
- Where applicable, the hazard must be reported to the facility owner, to other contractors that may be required to enter the space, and to the confined space entrants.

1.6.10.3 General Requirements for Permit Spaces

The contractor must inform the employees of the hazards of the permit space by posting danger signs, or by any other equally effective means, to warn employees of the existence and location of and the danger posed by the permit spaces.

> Note: A sign reading DANGER -- PERMIT SPACE, DO NOT ENTER or using other similar language would satisfy the requirement for a sign.

Contractors who identify or receive notice of permit spaces must post a sign as noted above or implement controls using the Signs, Signals, and Barricades procedure to prevent all unauthorized employees from entering that permit space.

The contractor must identify potential serious hazards and develop means to eliminate, isolate, or control those hazards.

Entry into a permit space requires compliance with Subsections 1.6.9.4, Atmospheric Monitoring; 1.6.9.5, Confined Space Entry Permit; 1.6.9.6, Duties; 1.6.9.8, Rescue and Emergency Services; and 1.6.9.13, Training, with the following exception:

- Entry into a permit space that has all physical hazards eliminated or isolated and the only potential hazard is a hazardous atmosphere does not have to comply with Subsection 1.6.9.8, Rescue and Emergency Services, provided that continuous forced air ventilation can accomplish the following:
  - Control the atmospheric hazard.
  - Prevent the accumulation of a hazardous atmosphere.
  - Is directed at the entrants.
  - Is from a clean source.

When employees are working in a space that is large or part of a continuous system, an early warning system must be provided that continuously monitors for nonisolated engulfment hazards. The system must alert entrants and attendants in sufficient time for the entrants to safely exit the space.

The following is required before entry into a permit space is permitted:

- All serious physical hazards must be eliminated or isolated.
- Hazardous atmospheres must be controlled unless it can be demonstrated that personal protective equipment (PPE) will provide effective protection for each employee in the permit space.

All permit spaces must be monitored by an outside attendant.

If possible, all cords, hoses, leads, etc., must be routed through an entrance other than the employee access into the confined space. Electrical cords must not be attached to or permitted to contact conductive surfaces.

Lighting equipment must be approved for the ignitable or combustible properties of the specific gas, vapor, dust, or fiber that will be present and must be sufficient to enable employees to see well enough to work safely and to exit the space quickly in an emergency.

Tools and equipment used in confined spaces that contain flammable or explosive atmospheres or materials must be of the non-sparking type.

Electric welding, gas welding, cutting, or any other hot work must not be performed on the interior, exterior, or near the openings of any confined space that may contain an atmosphere of more than 10 percent of the lower explosive limit (LEL) until the confined space has been properly cleared.

Employees may not enter permit spaces containing exposed energized parts unless illumination is provided that enables the employees to work safely. Where exposed energized parts are present, employees must be protected from making contact with the parts by installing shields, insulating blankets, or barricades when de-energization is not feasible.

The communications and coordination described below is required for entry into permit spaces.

Before entry operations:

- Overland Contracting Inc. must do the following:
  - Obtain the owner's information about the permit space hazards and previous entry operations.
  - Provide the following information to each contractor entering a permit space and any other entity at the site whose activities could foreseeably result in a hazard in the permit space:
    1. The information received from the owner.
    2. Any additional information that Overland Contracting Inc. has about the permit space.
    3. The precautions that the owner, Overland Contracting Inc., or other contractors implemented for the protection of employees in the permit spaces.
- The contractor must do the following:
  - Obtain all of Overland Contracting Inc.'s information regarding permit space hazards and entry operations.
  - Inform Overland Contracting Inc. of the permit space program that the contractor will follow, including any hazards likely to be confronted or created in each permit space.

After entry operations:

- The contractor must inform Overland Contracting Inc. of the following in a timely manner:
  - The permit space program followed.
  - Any hazards confronted or created in the permit space(s) during entry operations.
- Overland Contracting Inc. must apprise the owner of the information exchanged with the contractors.

A communication system must be preplanned to include communications between the attendant and entrant and a method for the attendant to summon rescue and emergency assistance.

1.6.10.4 Atmospheric Monitoring

Attendants and entrants must be supplied with proper air monitoring equipment and be trained on its proper use.

The preferred instrument is a direct-reading multi-gas meter that indicates oxygen, combustible atmospheres, carbon monoxide, and hydrogen sulfide, evaluated in that order.

Instruments must be checked prior to use to ensure that they are working properly.

All air monitoring equipment must be calibrated in accordance with manufacturer's specifications. Calibration logs, bump tests, and maintenance data must be made immediately available to confined space entrants, attendants, and entry supervisors upon request.

Pre-entry testing of the atmosphere must be done to the extent feasible from outside the confined space prior to any entry.

If isolation of the space is infeasible because the space is large or part of a continuous system (such as a sewer), pre-entry testing must be performed to the extent feasible, and entry conditions must be continuously monitored where entrants are working.

Pre-entry testing of the internal atmosphere of a confined space must be carried out as near as practicable to time of entry.

The atmosphere within the permit space must be continuously monitored unless the entry contractor can demonstrate that equipment for continuous monitoring is not commercially available or periodic monitoring is sufficient.

If continuous monitoring is used, the contractor must ensure that the monitoring equipment has an alarm that will notify all entrants if a specified atmospheric threshold is achieved or that an employee will check the monitor with sufficient frequency to ensure that entrants have adequate time to escape.

If continuous monitoring is not used, periodic monitoring is required.

All monitoring must ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

All levels of the confined space must be tested to ensure that there are no pockets of hazardous gases or fumes and no oxygen-deficient areas.

When testing is performed for atmospheric hazards, oxygen should be tested first, then combustible gases and vapors, and then toxic gases and vapors.

Entry into a confined space with an unsafe atmosphere is permitted only after all means and methods of control eliminate or isolate hazards.

Employees required to enter a confined space with an unsafe atmosphere, or one where controls to prevent a hazardous atmosphere are not effective, must be provided appropriate PPE.

If any significant interruption or change to the work occurs under these circumstances, the atmosphere must be re-tested before re-entry.

If a monitor alarm or any emergency stoppage of the work occurs, the entrants must evacuate the space and discuss the conditions with the supervisor before recommencing work.

Re-testing of the confined space must occur at the beginning of each shift.

Entrants, attendants, and entry supervisors may request additional monitoring for reevaluation of the atmosphere at any time while an active confined space entry permit is in effect.

Air monitoring results must be immediately supplied to any confined space entrant upon request.

1.6.10.5 Confined Space Entry Permit

Entry into a confined space requires that the Confined Space Entry Hazard Assessment be completed and signed by the competent person before entry is permitted. The purpose of the Confined Space Entry Hazard Assessment is to classify the confined space and to document the initial testing of the atmosphere.

If the confined space hazard assessment determines that the confined space has a potential for a serious physical hazard or a hazardous atmosphere, the confined space must be entered as a permit space using the Confined Space Entry Permit. The Confined Space Entry Permit must be completed and signed by the entry supervisor before entry is permitted.

Before entry into a permit space is permitted, the following must be completed.

- All serious hazards must be eliminated or isolated.
- Provisions are provided to ensure a safe atmosphere.
- The permit must be completed and signed by the entry supervisor.
- Employees must be briefed on the hazards and procedures for a safe entry.

The Confined Space Entry Permit must be signed by the entry supervisor, attendant, and competent person). In addition, rescue and emergency services must be identified and available during the entire scope of work. Failure to receive all of the required signatures or failure to notify and provide rescue services will cause the permit to be invalid, thus prohibiting entry.

If entry takes place and there is no permit, or work is being performed on an invalid permit, disciplinary actions will result, which may include immediate discharge.

When all permitted precautions have been accounted for, the entry supervisor may allow entry.

Before employees enter into the permit space, the permit must be hung outside the confined space. If there is more than one entrance to the confined space, all entrances must be posted with a copy of the permit.

Affected employees must be given an opportunity to review the Confined Space Entry Permit.

After the permit has been hung, but before any employee enters the confined space, a pre-entry briefing with all employees required to enter the permit space must be conducted by the entry supervisor. The briefing must cover all the items required to safely enter the permit space and the hazards associated with working in the permit space. A copy of the completed Confined Space Entry Permit must be returned to the site safety representative and filed.

Subcontractors must retain all issued Confined Space Entry Permits for their records. Copies of the Confined Space Entry Permits must be made available for auditing purposes.

When the work in the permit space is completed, the entry supervisor must verify that all persons and equipment have exited the confined space and that it is safe to remove the Confined Space Entry Permit. The entry supervisor must then sign, date, and write in the time the permit was removed. These permits must be retained.

The attendant, entrant, and entry supervisor must communicate any permit space condition changes to the entry supervisor. If these changes occur, the permit must be suspended until the entrants, attendants, affected employees, entry supervisor, and competent person meet to discuss potential hazards and address how to eliminate or control each hazard.

Canceled Confined Space Entry Permits must be held for at least 1 year to facilitate the review of the confined space program. Any problems encountered during an entry operation must be noted on the pertinent Confined Space Entry Permit so that appropriate revisions to the program can be made.

A review of the confined space program must be completed, using the canceled permits and corrective actions retained, within 1 year after each entry. All deficiencies noted and improvements to the program must be made as necessary to ensure that employees participating in entry operations are protected from confined space hazards.

1.6.10.6 Duties

1.6.10.6.1 Entrant

The entrant(s) must be familiar with and execute the following duties:

- Know the hazards that may be faced, including the mode, signs or symptoms, and consequences of the exposure.
- Follow all confined space entry permit conditions.
- Properly use equipment as required.
- Communicate with the attendant as necessary to enable the attendant to monitor entrant status and to alert entrants of the need to evacuate the space.
- Alert the attendant whenever the entrant recognizes any warning sign or symptom of exposure to a dangerous situation or detects a prohibited condition.
- Employees must exit from the permit space as quickly as possible whenever the following occurs:
  - An order to evacuate is given by the attendant or the entry supervisor, or an evacuation alarm is activated.
  - The entrant recognizes any warning sign or symptom of exposure to a dangerous situation or detects a prohibited condition.
- Monitor the confined space conditions closely.
- Follow the Job Hazard Assessment (JHA) and Safety Task Assignment (STA) hazard control procedures.
- Sign-in/sign-out on the permit.

1.6.10.6.2 Attendant

The attendant must be familiar with and execute the following duties:

- Know the hazards that may be faced during entry, including the mode, signs or symptoms, and consequences of the exposure.
- Follow all confined space entry permit conditions.
- Keep track of air monitoring equipment, ventilation equipment, etc. (as required according to the permit). Properly use the equipment as required by manufacturer's specifications.
- Keep the work area around the entry point clear of debris, materials, vehicles, and employees so as not to obstruct exit or emergency rescue.

- Be aware of possible behavioral effects of hazard exposure.
- Continuously maintain an accurate count and identify entrants.
- Remain outside the permit space during entry operations until relieved by another attendant.
- Do not enter the permit space for any reason.
- Communicate with entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate.
- Assess activities inside and outside the space to determine whether it is safe for entrants to remain in the space and order immediate evacuation from the permit space under any of the following conditions:
  - There is a prohibited condition.
  - A behavioral effect of hazard exposure is apparent in an entrant.
  - There is a situation outside the space that could endanger the entrants.
  - The attendant cannot effectively and safely perform all the duties required by this procedure.
- Summon the entrant when a permit condition has changed or is not in compliance with the permit.
- Summon rescue and emergency services when assistance is needed for emergency exit.
- Perform non-entry rescues as specified by company procedure.
- Perform no duties that might interfere with the primary duty to monitor and protect entrants.
- When unauthorized persons approach or enter a permit space while entry is under way, the attendant must do the following:
  - Warn them to stay away or exit immediately if they have entered.
  - Advise the unauthorized persons that they must exit immediately if they have entered the permit space.
  - Inform the entrants and entry supervisor if unauthorized persons enter the permit space.

1.6.10.6.3 Entry Supervisor

Entry supervisors must be familiar with and execute the following duties:

- Know the hazards that may be faced during entry, including the mode, signs or symptoms, and consequences of the exposure.
- Verify that acceptable conditions for entry exist before endorsing the permit and allowing entry to begin.
- Terminate the Confined Space Entry Permit and cancel the permit when entry operations are complete, a prohibited condition arises, or rescue services become unavailable.
- Verify that rescue services are available and that the means for summoning them are operable.
- Verify that the rescue services will make notification as soon as the rescue services become unavailable.
- Remove unauthorized individuals who enter or who attempt to enter the permit space.
- Determine, whenever responsible and at appropriate intervals, that acceptable entry conditions are maintained.
- Follow all Confined Space Entry Permit conditions.
- Verify that all other equipment (air movers, fans, rescue retrieval devices, communication systems, etc.) are all functioning properly and in good order.
- Suspend the Confined Space Entry Permit when conditions change or are not met.

1.6.10.7 Multi-Contractor Entries

When more than one contractor performs permit space entry at the same time, or when multiple activities could foreseeably result in a hazard in the permit space, Overland Contracting Inc. and the contractors entering the space must coordinate entry operations.

All entities must coordinate their confined space entry on one permit. All entities must agree on who will be the entity responsible for managing the entry. If the entities cannot agree on who will be the responsible entity, the multi-contractor confined space entry will not be permitted.

1.6.10.8 Rescue and Emergency Services

Non-entry rescue is required for entry into permit spaces described in Subsection 1.6.9.4, General Requirements for Permit Spaces, unless the retrieval equipment would increase the overall risk of the entry operation or would not contribute to the rescue of the entrant.

Whenever non-entry rescue is not selected, the contractor must designate an entry rescue service.

If an injured entrant is exposed to any substance with a required Safety Data Sheet (SDS) or similar document, that SDS or document will be made available to the medical facility treating the entrant.

At least one member of the rescue team must hold a current certificate in first aid and CPR and is available.

If a rescue should become necessary, the attendant must do the following:

- Notify and summon the rescue team or service.
- Attempt non-entry rescue procedures to the extent possible by the circumstances.
- Monitor the situation and be ready to give rescuers information on how many victims and their status, what hazards, chemical types, concentrations, etc., are present.

If entries are planned at an owner's facility, the Site Safety Manager must be contacted to evaluate and coordinate the entry. If the Site Safety Manager is satisfied that the elements of the owner's facility confined space entry procedures and rescue services are adequate, entry into the permit space is permitted.

1.6.10.9 Non-Entry Rescue

Non-entry rescue is the preferred means to rescue entrants.

Retrieval system requirements are as follows:

- Each entrant must use a full body harness, with a retrieval line attached at the center of the back near shoulder level, or other appropriate point.
- The other end of the retrieval line must be attached to a mechanical device or fixed point outside of the permit space to enable immediate use. A mechanical device must be used to retrieve employees from vertical type permit spaces more than 5 feet deep.

Equipment that is unsuitable for retrieval must not be used, including, but not limited to, retrieval lines that have a reasonable probability of becoming entangled with the retrieval lines used by other entrants, or retrieval lines that will not work due to the internal configuration of the confined space.

Whenever non-entry rescue is selected, the entry contractor must ensure that retrieval systems or methods are used whenever an entrant enters a permit space and must confirm prior to entry that emergency assistance would be available in the event that non-entry rescue fails.

Each rescue team member is required to practice making entry rescues at least once every 12 months. The practice must include simulated rescue operations in which they remove dummies, manikins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces must, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.

Employees designated to provide entry rescue must be trained as an entrant.

1.6.10.10 Entry Rescue

When employees are required to wear breathing equipment or the atmosphere could become immediately life threatening, rescue employees and equipment must be in place at the point of entry before any entry is made.

If entry rescue services are required, the entry rescue service's experience, knowledge, and written procedures will be evaluated by the Site Safety Manager.

The Site Safety Manager will evaluate a prospective entry rescuer service's ability to respond to a rescue summons in a timely manner (considering the hazard(s) identified) and the rescue service's ability (in terms of proficiency with rescue-related tasks and equipment) to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified.

A rescue team or service must be from those evaluated that meet the following selected criteria:

- Has the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified.
- Is equipped for, and proficient in, performing the needed rescue services.
- Agrees to notify the contractor immediately if the rescue service becomes unavailable.

The entry rescue service must be provided access to the facility to evaluate the permit space for planning purposes. The outside service must be allowed an opportunity to practice rescue procedures at its discretion.

Rescue equipment must be available in the event of an emergency. The attendant is responsible for summoning rescue when an entrant is not responsive or when a hazardous condition is experienced. If air monitoring equipment shows a low oxygen level, the attendant must summon the entrant to exit the space.

If the entrant is not responsive, rescue actions must commence immediately.

Entrants and attendants are required to be trained on rescue devices and procedures prior to entry.

1.6.10.11 Employee Participation

Attendants and entrants must be provided with an opportunity to observe any testing of a confined space.

Affected employees must be consulted on the development and implementation of all aspects of the program that requires entry under a Confined Space Entry Permit.

All information required to be developed by this procedure must be made available to each affected employee.

1.6.10.12 Definitions

Confined space is defined as any area that has limited means of ingress or egress, is not designed for continuous employee occupancy, and is large enough for an employee to bodily enter. Examples of confined spaces include, but are not limited to, storage or transportation tanks, process vessels, pits, vats, vaults, silos, sewers, manholes, sumps, ducts, unventilated rooms with limited access openings, pipelines, siphons, monopoles, penstocks, and scroll cases.

Permit space is a confined space that has the potential to have one or more of the following characteristics:

- Hazardous atmosphere:
  - Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.
  - Combustible atmospheres in excess of 10 percent of its LEL.
  - Airborne combustible dust at a concentration that meets or exceeds its LEL. This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 meters) or less.
  - Toxic atmospheres generated by work activities are present or have the potential to enter into an area.
  - Any other atmospheric condition that is immediately dangerous to life or health.
- Engulfment hazard.
- Entrapment hazard.
- Electrocution hazard.
- Restricted entry for rescue purposes.
- Contains any other recognized serious safety or health hazard, such as extreme heat or cold, biological hazards, vermin, etc.
- Entry into a confined space is defined as breaking the plane of the opening into the confined space with any part of the body, whether intentional or not.

1.6.10.13 Training

Employees who are required to enter a permit space must be trained in the following:

- Specific hazards of confined spaces.
- Confined space processes and procedures.
- Roles and responsibilities.

- Hazardous control methods available to protect employees (e.g., equipment, tools, PPE, etc.).
- Dangers associated with authorized and unauthorized rescue.

Various levels of confined space training are required according to the individual roles and responsibilities (entrant, attendant, entry supervisor, and competent person).

Rescue and emergency services must have each affected employee trained in basic first aid and CPR. At least one of the members on the rescue and emergency services team must have a current certification in basic first aid and CPR.

All confined space training must establish proficiency in their duties and be documented.

Training records must include the employee's name, the trainer's name, and the date of the training.

Training records must be retained in the respective project files. At a minimum, all confined space training records must be kept for the duration of the project.

According to the confined space hazards, conditions of entry, or permit conditions, additional training may be required if the initial entry conditions change, work processes change, roles or responsibilities change, or new hazards are encountered. Additional training is also required if there is found to be inadequacies in the employee's knowledge or skills relating to confined space.

1.6.11 Trenching and Excavation Notice

Before Contractors commence work on any trench or excavation, they shall first submit a completed Excavation and Trench Permit (Figure 23) to Overland Contracting Inc. The permit shall be submitted far enough (at least 24 hours) in advance to allow Overland Contracting Inc. ample time to verify the Contractor's submittal. After verifying the information, the authorized Overland Contracting Inc. representative shall sign the permit and return a copy of it to the Contractor. The Contractor may commence work after receiving the signed permit.

For all trenches or excavations over 20 feet deep, the Contractor must have the sloping, shoring, or shielding method designed by a Professional Engineer registered in the state where the work is performed. The design must be submitted to Overland Contracting Inc. as an attachment to the Excavation and Trench Permit.

The Contractor shall appoint a competent person, as defined in OSHA Standard 29 CFR 1926 Subpart P, to fill out the permit and monitor all trench and excavation work. Daily excavation inspections are also required to be performed and documented. These forms are to be made available to Overland Contracting Inc. upon request.

The signature by Overland Contracting Inc. in no way changes the Contractor's responsibility for locating all underground utilities and repairing damaged utilities as required by the contract. Overland Contracting Inc. shall not be held responsible for the safety requirements for the trench or excavation. The Contractor's competent person shall be responsible for all safety requirements as stated in OSHA Standard 29 CFR 1926 Subpart P.

The use of mechanical digging equipment is not allowed within 18 inches of the utility regardless of what it is (electrical, gas, water, sewer, etc.). Hand digging, hydroexcavating, or other safe means of excavating must be used to locate utilities and work around exposed utilities.

1.6.12 Barrier Tape Identification System

In order to uniformly identify particular hazards on the construction site, a barrier tape identification system has been developed for use by all the Contractors working on the project.

This system has been developed so that any employee working on the site, regardless of employer, can recognize and avoid a hazard when properly marked.

The following barrier tape identification system shall be used:

- Yellow Barricade Tape: Used for isolating an area, passageway, equipment, etc., while providing a warning to personnel in the area that an abnormal condition exists. Yellow barricade tape is printed with the word "Caution" and additional language related to the nonserious hazard situation. Individuals not involved in the activities related to the application of the yellow barricade tape may enter or cross the area if they know the nature of the hazard and how to avoid it.
- Red Barricade Tape: Used for barricading an area, passageway, etc., that contains or may present a serious safety hazard and prohibiting access to unauthorized personnel. Red barricade tape is printed with the word "Danger" and additional language related to the hazardous condition. Only authorized individuals directly involved with the activities associated with the application of the red barricade tape shall cross and/or enter the area.
- Yellow and Magenta (Purple) Tape: Used for warning of a possible radiation hazard, X-ray, etc. "Do not cross."
- Protective Barricade: Provides physical protection and shall be able to withstand 200 pounds of force in any direction with minimal deflection. Examples are wooden posts and railings or cables surrounding a floor opening. Protective barricades must be used in combination with the appropriate colored barricading tape.

The Contractor erecting the barrier tape shall hang a tag or sign on the tape that indicates the hazard, duration of hazard, name of Contractor, and name and phone number of the person erecting the tape.

The barricade shall be placed at or near a level of 42 inches from the ground or surface. The barricade shall also be completely enclosing and have enough support to maintain the proper height requirement.

The barriers shall be erected far enough back from the hazard to allow for adequate warning and protection. The barrier shall be constructed so that it will stand against adverse weather conditions and construction traffic. If the hazard is of a magnitude that requires additional protection, it shall be the Contractor's responsibility to provide such protection as well as the barrier tape.

It will be the responsibility of the Contractor erecting the barrier tape to maintain it as long as the hazard is present. Barricades shall be removed completely once the work is complete and all attempts shall be made to have the area safe/secured by the end of the shift.

1.6.13 Crane Suspended Work Platform

The use of a crane or derrick to hoist employees on a personnel platform is prohibited, except when the erection, use, and dismantling of conventional means of reaching the worksite, such as a personnel hoist, ladder, stairway, aerial lift, elevated work platform or scaffold, would be more hazardous or is not possible because of structural design or worksite conditions.

The suspended personnel platform design criteria, platform specifications, platform loading, rigging trial lift, inspection and proof testing, work practices, traveling, and prelift meeting shall comply with OSHA Standard 29 CFR 1926.550(g). This shall be documented and submitted to the Project ESH&S Manager for review within 24 hours of the lift occurring.

1.6.14 Welding, Cutting, and Heating Permit

Contractors shall obtain a Welding, Cutting, and Heating Permit (Figure 24) from their safety representative before welding, cutting, grinding, or performing any other “hot work” in hazardous work areas or in other areas identified by Overland Contracting Inc. Hazardous work areas are those areas that contain, or have the potential to contain, flammable or combustible materials, gases, dusts, vapors, or liquids.

The Contractor requesting the permit shall address each item listed on the permit and resolve any problems before starting the work. The permit shall be issued after satisfactory completion of all items.

The Contractor shall maintain a copy of the permit in the work area until the work is completed. Upon completion of the work, and once it is determined that no fire hazards exist, the Contractor shall return the permit to his safety representative for filing.

1.6.15 Steel Erection

1.6.15.1 Purpose

The purpose of this procedure is to ensure that steel erection activities are being performed in accordance with OSHA Standard Subpart R 1926.750-761 requirements. All contractors associated with steel erection activities, as defined by OSHA, shall develop plans to meet the OSHA requirements as well as the specific steel erection requirements set forth in this manual.

1.6.15.2 Fall Protection Requirements

Fall protection requirements as outlined in Subsection 1.6.7 of this manual shall be followed. No employee or work operation is exempt from the 6 foot 100 percent fall protection requirement. This includes connectors, boltup operations, decking operations, etc. The exemptions set forth in the OSHA standard that allow certain workers and work operations to not utilize fall protection when exposed to falls greater than 6 feet ARE NOT recognized or allowed on this project.

1.6.15.3 Steel Erection Program Requirements

The requirements listed below are considered minimum requirements and must be followed for all steel erection activities:

- A site-specific steel erection plan and a JHA must be provided to Overland Contracting Inc. before steel erection activities begin. This plan must be prepared by a qualified person as defined by OSHA and address at least all of the following:
  - Fall protection procedures for the erection process.
  - Training of workers involved with the steel erection process.
  - Erection sequence.
  - Crane selection and placement.
  - Crane inspection program.
  - Rigging inspection program.
  - Site preparation requirements (e.g., adequate access roads, means and methods for pedestrian and vehicular control, site drainage, soil compaction and stability).
  - Overhead protection/routing of lifts.
  - Critical lift procedures.
  - Procedures for steel erection activities (e.g., bracing/guying, connections, decking, roofing, siding, grating, etc.).
  - Falling object protection procedures.
  - Perimeter fall protection planning and turnover.
- Contractors shall complete the Steel Erection Checklist (Figure 25) and submit it to Overland Contracting Inc. before any steel erection activities begin. The checklist shall be discussed in a specific steel erection meeting that will be coordinated by Overland Contracting Inc. All contractors involved in the steel erection process shall be at the steel erection planning meeting and shall comply with the requirements of this section.
- Steel erection activities may not start until Overland Contracting Inc. formally notifies the steel erector in writing that steel erection activities may commence. Notification will be in the form of a letter with an attached verification that anchor bolt repairs and concrete curing requirements have been met. Refer to the Concrete Anchor Bolt Release form (Figure 26).

1.6.15.4 Perimeter Guardrail Fall Protection Systems

Overland Contracting Inc. shall arrange the transfer of responsibility for perimeter fall protection, such as cable guardrails, when the steel erection contractor leaves the jobsite. To facilitate the process, the Field ESH&S Manager, the Project ESH&S Manager, and the steel erection contractor shall complete an inspection of the perimeter guardrails. Any deficiencies noted with the perimeter guardrails during the inspection shall be documented on the Perimeter Guardrail Turnover form (Figure 27). The deficiencies shall be corrected by the responsible party noted on the form. After the deficiencies are corrected, Overland Contracting Inc. and the steel erection contractor will sign off on the Perimeter Guardrail Turnover Form. Contractors that work in areas that are protected by previously installed fall protection components will be given a copy of the Guardrail Turnover Form for review. Upon acceptance of the form, that Contractor assumes responsibility for maintenance of the fall protection system(s). If a contractor damages the guardrail system, that contractor must make repairs immediately.

1.6.16 Chromium VI Exposure Program

These procedures apply to all occupational exposures to Chromium VI in all forms and compounds while performing construction work.

Contractors are to provide to Overland Contracting Inc. the following:

- A written list of chemicals/substances/products that they use that contain Chromium VI along with corresponding Material Data Safety Sheets. If a contractor does not use any chemicals/substances/products that contain Chromium VI, provide a letter to Overland Contracting Inc. stating such.
- If exposures are possible, provide a written baseline monitoring plan in accordance with this procedure as well as applicable OSHA regulations.
- Provide monitoring results that also include sampling strategies and standard industrial hygiene sampling documentation information (i.e., date of sample, weather conditions, work process, duration of sample, calibration information, etc.).

Whenever there is a potential for exposure to Chromium VI, the workers' exposure must be assessed by representative sampling (worst case) or a combination of air monitoring data, historical data, and objective data. All sampling records used for worker exposure must identify processes, materials used, control methods, work practices, and environmental conditions. Copies of the documentation supporting the assessment must be provided to Overland Contracting Inc.

Eating and drinking areas must be maintained as free as practicable of Chromium VI.

Workers must be provided respiratory protection for exposures above the Permissible Exposure Level of 5 micrograms of Chromium VI per cubic meter of air.

Whenever exposures are determined to be above the Action Limit of 2.5 micrograms of Chromium VI per cubic meter of air, the Contractor must provide Overland Contracting Inc. a written plan of action compliant with applicable requirements of 29 CFR 1926.1126. Such written program must address notification of exposure, exposure determinations, protective clothing and equipment, respiratory protection, hygiene areas and practices, medical surveillance, labels, training, and recordkeeping.

1.6.17 Silica Exposure Program

This procedure applies to all occupational exposures greater than the Action Limit (AL) of 25 micrograms of respirable crystalline silica (silica) per cubic meter of air or material containing more than 0.1 percent crystalline silica (weight/weight).

Contractors are to provide Overland Contracting Inc. with the following:

- A written list of the chemicals/substances/products they use that contain silica along with corresponding Safety Data Sheets. If a Contractor does not use any chemicals/substances/products that contain silica, provide a letter to Overland Contracting Inc. stating such.
- A written silica exposure control plan compliant with applicable requirements of 1926.1153, Respirable Crystalline Silica.
- If exposures are possible, provide a written baseline monitoring plan in accordance with this procedure as well as applicable Occupational Safety and Health Administration (OSHA) regulations.
- Provide monitoring results that also include sampling strategies and standard industrial hygiene sampling documentation information (i.e., date of sample, weather conditions, work process, duration of sample, calibration information, etc.).

1.6.17.1 Controls

Contractor must be able to demonstrate that workers' exposures are equal to or less than the AL or implement controls. There are two options for controls: task specified controls (29 Code of Federal Regulations [CFR] 1926.1153 Table 1, Specified Exposure Control Methods) or exposure assessment.

Table 1 lists specified engineering controls, work practices, and respiratory protection for use of the following tools:

- Power saws.
- Power coring or drilling equipment.
- Jackhammers.
- Grinder equipment.
- Milling equipment.
- Crushing equipment.
- Heavy equipment.

The Contractor must fully and properly implement the specified controls (engineering controls, work practices, and respiratory protection) for tasks listed in Table 1 when working with materials containing more than 0.1 percent silica or they must conduct an exposure assessment.

1.6.17.2 Exposure Assessment

There are two options for exposure assessments: the performance option and the scheduled monitoring option.

1.6.17.3 Performance Options

The performance option can be used for exposure assessment whenever any combination of air monitoring or objective data is sufficient to accurately characterize employee exposures.

If the assessment is that the exposure is greater than the Permissible Exposure Level (PEL), controls must be implemented.

1.6.17.4 Scheduled Monitoring Option

The scheduled monitoring option can be used when neither Table 1 nor the performance option is used. The scheduled monitoring option requires initial monitoring for workers exposed to silica. Subsequent sampling is based on the initial sampling results in accordance with 1926.1153, Respirable Crystalline Silica.

1.6.17.5 Method of Compliance

Whenever the exposure assessments determine that exposures are greater than the PEL of 50 micrograms of silica per cubic meter of air, the Contractor must provide engineering and work practices to reduce and maintain exposure equal to or less than the PEL unless the Contractor can demonstrate that controls are not feasible. When such engineering and work practice controls are not sufficient to reduce employee exposure equal to or less than the PEL, controls must be supplemented with respiratory protection.

1.6.17.6 Silica Exposure Control Plan

Whenever exposures are determined to be above the AL, the Contractor must provide Overland Contracting Inc. a written Silica Exposure Control Plan compliant with applicable requirements of 1926.1153, Respirable Crystalline Silica.

The Contractors must establish and implement a written Silica Exposure Control Plan that contains descriptions of the following:

- Tasks with exposure greater than AL.
- Engineering controls, work practices, and respiratory protection used for each task.
- Housekeeping measures used to limit employee exposure.
- Procedures used to restrict access to work areas to minimize exposure regardless of who creates the hazard.

The written Silica Exposure Control Plan shall be as follows:

- Reviewed and updated annually.
- Available for copying to employees and Overland Contracting Inc.
- Have a designated competent person to make frequent and periodic inspections of the jobsite, materials, and equipment to implement the written Silica Exposure Control Plan.

1.6.18 Pneumatic Pipe Plugs

All pneumatic pipe plugging equipment shall be used in compliance with the manufacturer's operating and safety manual. All employees assigned to use pneumatic pipe plugging equipment shall be trained in proper pipe plug use and maintenance. Each employee shall receive their own copies of the pipe plug manufacturer's operating and safety manual. Pneumatic pipe plugging equipment shall not be modified by any employee without the written permission of the manufacturer.

All pneumatic pipe plugging equipment shall be purchased directly from the manufacturer, from an authorized manufacturer's representative or from an authorized distributor. Only parts and accessories purchased directly from the manufacturer, an authorized manufacturer's representative or an authorized distributor shall be used to maintain pneumatic pipe plugging equipment. Pneumatic pipe plugging equipment maintenance and repair shall be performed by employees only to the extent allowed by the manufacturer. Pneumatic pipe plugging equipment shall be used with a high-pressure extension hose with an attached pressure gauge.

Pneumatic Pipe Plugs must be inspected and maintained as per the manufacturer requirements.

PNEUMATIC PIPE PLUGS ARE EXTREMELY DANGEROUS. NEVER ENTER A STRUCTURE WHILE A PNEUMATIC PIPE PLUG IS IN USE WITHOUT PROPER TASK PLANNING AND APPROVAL FROM SAFETY.

1.6.19 Teamworx

Each crew will check in via the Teamworx app daily. Each time a crew arrives on site or moves to a new site they are to update their location. If more than one crew is at the same location both crews shall check in. At the end of the work day each crew shall sign out to show they are no longer working on the program.

1.7 Demolition-Related Hazardous Materials Protection Program

1.7.1 General

This section identifies the hazards of employee exposure to hazardous materials (lead, asbestos, heavy metals, etc.) and sets forth procedures to limit the exposure encountered during demolition activities that disturb previously installed building materials.

To accomplish this task, Overland Contracting Inc. focuses on having Client, if possible, remove identified demolition-related hazardous materials that may pose a hazard as a result of the demolition activities. The primary objective shall be to verify that Client has adequately identified and abated the demolition-related hazardous materials to a level that removes Overland Contracting Inc. from application under the relevant governmental employee protection regulations. Depending on Contract terms, Client may be responsible for the identification and removal of known potential hazards. Client will be requested, in writing, to provide certification by a qualified party that the work areas affected by demolition are free of demolition-related hazardous materials to a degree that removes Overland Contracting Inc. from application of the relevant governmental employee protection regulations. Upon the receipt of Client's certification, Overland Contracting Inc. will have a qualified party verify the adequacy of the Client's report. In recognition that some demolition-related hazardous materials may be overlooked by either of the parties, and to minimize and mitigate unexpected releases or exposures to those materials, employees are trained to recognize and avoid demolition-related hazardous materials that may be present on the job.

In the event that removal of the demolition-related hazardous material becomes part of the Scope of Work, additional programs will be implemented that will specifically address the demolition-related hazardous material(s) in question. If Contractors are hired and are potentially exposed to the materials, specific programs are to be developed by the Contractor which ensure that material identification and handling are executed in accordance with this procedure and with applicable governmental regulations.

1.7.2 Program Administration

The Project ESH&S Manager, or designee, is the program administrator and is responsible for the overall management and administration of the Demolition-Related Hazardous Materials Protection Program. If the project does not have a safety professional on-site, the Project Manager assumes responsibility and will work with the Business ESH&S Manager to ensure compliance with this procedure.

1.7.3 Worksite-Specific Procedure

This procedure is supplemental to any Client procedure already in place. The worksite-specific procedures will be updated as necessary to reflect changes in workplace conditions that may affect the Demolition-Related Hazardous Materials Protection Program. Client is solely responsible for the abatement of any potential hazards that may result from the planned demolition.

1.7.4 Demolition-Related Hazardous Materials Protection Program

All Overland Contracting Inc. employees and/or Overland Contracting Inc. Contractors, including lower tier subcontractors, involved in or potentially affected by demolition activities will receive the following training at the time of orientation training:

- The methods of recognizing building materials that contain demolition-related hazardous materials. These materials are identified in Subsections 1.7.8.1 and 1.7.8.2.
- The requirement to stop work if a demolition-related hazardous material is suspected.
- The requirements for reporting potential demolition-related hazardous materials to the Overland Contracting Inc. responsible party and Client.
- Client's methods of labeling or posting potential demolition-related hazardous materials for identification purposes.

1.7.5 Pretask Activities

- Before any work or task commences, the Contractor's supervisor responsible for the work, Overland Contracting Inc. representative(s) responsible for the work, Overland Contracting Inc. consultant, Client representative, and a worker shall perform a walk-through of the planned demolition area to assess and identify any potential for the presence of demolition-related hazardous materials. Variations to this list of individuals are allowed, depending on the nature of the work and the timing of the inspection.
- A safety meeting shall be held to inform employees of the efforts made to identify and remove potential demolition-related hazardous materials. The likely sources of those materials, the means to avoid the hazards, and the means to report a potential hazard will be reviewed. A copy of the safety meeting shall be forwarded to the Overland Contracting Inc. responsible party.
- Any discovery of, or potential for, suspect demolition-related hazardous materials must be forwarded to the Overland Contracting Inc. responsible party so that identification and abatement can be initiated through Client or the appropriate party per Contract.
- Client will provide Overland Contracting Inc. with a report certifying that the areas impacted by the planned demolition are free of demolition-related hazardous materials and will pose no hazards as a result of demolition activities.
- The Overland Contracting Inc. responsible party, using a qualified inspector, may have an independent inspection for demolition-related hazardous materials conducted in accordance with the requirements of applicable regulations to confirm and demonstrate that no potential demolition-related hazardous materials are present.
- If utilized, the inspector will provide the Overland Contracting Inc. responsible party with a report certifying that the areas impacted by the planned demolition are free

of demolition-related hazardous materials and will pose no hazards as a result of demolition activities.

- Before any work or task commences, the contractor's supervisor responsible for the work, the Overland Contracting Inc. representative(s) responsible for the work, Overland Contracting Inc. qualified inspector, Client and a worker shall perform a second walk-through of the planned demolition area to assess and identify any remaining potential for the presence of demolition-related hazardous materials following the abatement activity.

1.7.6 Task Activities

- A JHA, or equivalent, shall be completed for all demolition activities and a copy submitted to Overland Contracting Inc. for review. This analysis must be completed before any task may proceed.
- All employees working in an area where demolition activities are taking place shall receive demolition-related hazardous materials awareness training that covers recognition and avoidance of such hazards. The training will be documented, with a copy forwarded to Overland Contracting Inc.

1.7.7 Emergency Response

- Upon discovery or accidental release of suspected demolition-related hazardous materials from previously installed building materials, all work shall cease and the employees shall leave the area. The employees will notify their supervisor. The supervisor will see that Overland Contracting Inc. and Client are notified.
- The supervisor shall barricade the suspect area on all sides plus 25 feet to restrict access and eliminate further spread of the possible contamination.
- Work will not resume until Overland Contracting Inc. has documented assurance that the area is clear of any potential demolition-related hazardous materials.

1.7.8 Identification of Demolition-Related Hazardous Materials

The following lists are provided to help individuals identify potential demolition-related hazardous materials, in accordance with the Demolition-Related Hazardous Materials Protection Program. These lists are not to be considered all-inclusive and may not specify all materials that may be encountered on all jobsites. Further analysis for specific demolition-related hazardous materials may be needed on a case-by-case basis. Additions may be added to these lists for project-specific hazards.

1.7.8.1 Identification List of Materials That May Contain Asbestos

Asbestos materials or materials containing asbestos shall not be incorporated into the work, even if the asbestos materials are encapsulated in a binder material.

The following materials may contain asbestos:

- Acoustical plaster.

- Adhesives.
- Any material that is marked using the phrase “stos.”
- Asphalt floor tile.
- Back of electrical panel waffle board.
- Base flashing.
- Blown-in insulation.
- Boiler insulation.
- Breaching insulation.
- Caulking/putties.
- Ceiling tiles and lay-in panels.
- Cement pipes.
- Cement siding.
- Cement wallboard.
- Chalkboards.
- Construction mastics (floor tile, carpet, ceiling tile, etc.).
- Cooling towers.
- Decorative plaster.
- Ductwork flexible fabric connections.
- Electric wiring insulation.
- Electrical cable.
- Electrical cable marked with “Rockbestos.”
- Electrical cloth.
- Electrical panel partitions.
- Elevator brake shoes.
- Elevator equipment panels.
- Expansion joints.
- Fire blankets.
- Fire curtains.
- Fire doors.

- Fireproofing materials.
- Flooring backing.
- Grout material.
- Heating and electrical ducts.
- High temperature gaskets.
- HVAC duct insulation.
- Interior fire doors.
- Joint compound in older homes/buildings.
- Joint compounds.
- Laboratory gloves.
- Laboratory hoods/table tops.
- Lightweight concrete.
- Packing materials (for wall/floor penetrations).
- Pipe insulation (corrugated air-cell, block, etc.).
- Power cable insulation.
- Putty caulks and cements (such as in chemical-carrying cement pipes).
- Roofing felt.
- Roofing shingles.
- Siding on old residential buildings.
- Spackling compounds.
- Spray on insulation barrier-claymastic.
- Spray-applied insulation and fireproofing.
- Taping compounds (thermal).
- Textured paints/coatings.
- Thermal paper products.
- Transite duct bank.
- Vinyl floor tile.
- Vinyl sheet flooring.
- Vinyl wall coverings.

- Wall penetrations-claymastic.
- Wall veiling texture in older buildings/homes.
- Wallboard.
- Water diverter panels.

1.7.8.2 Identification List of Materials That May Contain Heavy Metals (Lead, Hexavalent Chromium, Arsenic, Cadmium, etc.)

The following materials may contain heavy metals:

- Paint and coatings (usually found on structures such as tanks, vessels, and equipment; also may be found on pipes, structural steel, walls, ceilings, ductwork, noise control materials, handrails, steps, etc.). Additionally, heavy metals may be found in batteries, solder, pottery glaze, window glazing, water and sewer piping, gasoline, cable coverings, stainless steel, high-pressure steel, cadmium coated metals, fluorescent bulbs, mercury vapor lamps, emergency lighting lamps, etc.
- Lead-based paint was widely used in industrial environments to help the coating resist corrosion. In 1978, the Consumer Product Safety Commission (CPSC) banned lead in paints for residential use. Lead-based paint is more prevalent in the industrial community, especially in older facilities.
- Ash from combustion or incineration may contain heavy metals. Ash and fly ash are commonly found in incinerators and burners that use various products as fuel or for volume reduction. If ash is encountered or suspected to be encountered, testing of the ash shall be conducted to identify its makeup and the concentrations of heavy metals.
- Sludge may also contain heavy metals. If sludge is encountered or suspected to be encountered in the demolition or construction process, testing of the sludge is necessary to identify concentrations of heavy metals in the product.

1.8 Lockout/Tagout Clearance Procedures

1.8.1 Requirement

Contractors shall establish a program consisting of energy control procedures, employee training, and periodic inspections on Contractor-owned machinery and equipment to ensure that, before any employee performs work where the unexpected energizing, startup, or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy source and rendered inoperable.

The use of both tags and locks shall be included in the Contractor's program.

As required by project conditions, the Contractor shall coordinate the use of a project-specific lockout/tagout procedure for all work on permanent plant equipment and interface work with Client's existing facilities. Subsection 1.8.3 shall be strictly adhered to in these cases.

1.8.2 Electrical Installations

A specific JHA shall be performed when working within energized or partially energized electrical equipment, both permanent and temporary. Where an arc flash hazard is identified in accordance with NFPA 70E arc flash risk assessment, personnel within the arc flash boundary, shall wear arc flash clothing as required by the standard.

All live electrical work shall be conducted in accordance with the approved Live work permit.

An electrician using a voltage meter to test for the presence of zero voltage shall use a proving device to verify that their voltage meter is working correctly immediately before and after measuring voltage. Personnel performing voltage testing shall comply with the requirements of NFPA 70E and wear the required arc flash PPE.

The requirements of NFPA 70E shall be applied when performing battery and UPS associated works.

All workers working within or in the vicinity of energized electrical equipment shall be trained in the use of that equipment and use the arc flash maintenance mode switch when applicable.

The contractor should assume that workers working inside energized LV and MV electrical equipment with voltages above 125V will be required to wear arc Category 2 arc flash clothing. This will include personnel performing live work, electrical testing as well as the pulling and termination of cables in energized equipment. Enhanced PPE may be required for some circumstances depending on the hazard exposure.

1.8.3 Overland Contracting Inc. Safety Lockout/Tagout Procedure

Refer to Appendix A for the Safety Lockout/Tagout Procedure (Hazardous Energy Control).

1.8.4 Client Requirement for Control of Hazardous Energy

(If applicable.)

1.9 Project Safety and Health Rules

1.9.1 Policy

In addition to other requirements of the Project Loss Control Program, Overland Contracting Inc. has established mandatory safety and health rules. Contractors shall ensure that their employees receive a copy of the Occupational Safety and Health Regulations (Figure 28) and are familiar with these rules and the possible penalties for violations. Mandatory Project Safety and Health Rules may be added or deleted from this Project Loss Control Manual as deemed necessary by Overland Contracting Inc. Revisions or additional rules will be sent to each Contractor. Upon receipt, the Contractor will be responsible for informing each of his or her employees and Contractors of the revised or additional rules.

1.9.2 Mandatory Project Safety and Health Rules

The following Project Loss Control Program rules are adopted for the protection of persons involved with the construction of this project. These rules apply to management, Contractor personnel, and visitors while on the jobsite. These rules are general in nature and are not to be considered all-inclusive; nor do they relieve Client, Overland Contracting Inc., Contractors, or their employees from applicable Occupational Safety and Health Regulations promulgated by governmental authorities:

Mobile Devices

Personal cell/mobile phones/mobile device use is prohibited during work hours on-site. Personal cell/mobile phones/mobile devices may be kept in designated break areas for use during lunches and breaks at office trailers and designated break areas. Contractor supervisors may carry and utilize company phones if required to perform their job duties.

Housekeeping

(1) Leads, hoses, and extension cords shall be hung up (approximately 7 feet) with a nonconductive material, off all floors, stairways, and walkways in a manner such that they are not in contact with the building steel structure. Leads, hoses, and cords are to be removed from the work area when the work is completed or when they are no longer intended to be used. Lead, hose, and cord "roll-ups" will be required if an excessive amount of equipment accumulates in a work area creating housekeeping or trip hazards.

(2) Trash such as drinking cups, cans, and scraps from lunch are not to be thrown down, but should be disposed of properly in marked containers.

(3) Available material, equipment, concrete forms, pipe, etc., are to be orderly and stacked out of walkways and from in front of doors, stairways, and ladders.

(4) Oil, grease, and other such liquid spills shall be cleaned up at the time of the spill and are not to be left unattended.

(5) Each craft is responsible for housekeeping in its respective work areas.

(6) Where such items as protruding rebar and anchor bolts create an impalement or tripping hazard, they shall be properly protected and conspicuously marked.

(7) Trash barrels and 55 gallon drums shall not be hoisted by holes cut in the sides; adequate means of support shall be used.

Personal Protective Equipment

Contractor shall furnish safety and health equipment and enforce the use of such equipment by its employees and the employees of its subcontractors.

Standard personal protective equipment (hard hat, safety glasses, approved work clothes) are required to be worn from "gate to gate," i.e., as soon as the worker passes through the entrance portal to the work site, he or she will be properly covered up.

(1) Eye Protection--ANSI approved safety glasses with side shields shall be worn at all times except while employees are in vehicles with enclosed cabs, or where additional eye protection is required.

Welders are required to wear safety glasses under their welding hoods unless approval is obtained from the Project ESH&S Manager.

Safety goggles shall be worn when possible liquid chemical eye hazards are present.

Full face shields shall be worn while employees are grinding, chipping concrete, or when possible eye and face hazards are present. Safety glasses are required to be worn under the face shields.

(2) Hearing protection shall be worn when employees are working in excessively noisy areas.

(3) Respiratory protection shall be worn when employees are exposed to hazardous levels of gas, vapor, or particulate contaminants in the atmosphere.

(4) Hard hats shall be worn at all times in the construction area. Specific Contractor hard hats are to be colored the same for identification purposes. Contractors shall submit color request for approval prior to mobilization to minimize duplication with other Contractors. Hard hats shall be labeled with employee name or employee number to satisfaction of Project ESH&S Manager. “Cowboy” style hard hats are not permitted on the project. “Soft Cap” welding is not permitted unless permission is obtained from the Overland Contracting Inc.

(5) Work Boots--In the construction area, good leather ANSI approved Safety-Toe (steel or composite-toe) work boots with a hard sole and 6 inch tops that support the ankle are required.

Tennis shoes, sandals, “flip-flops,” and other open-toed footwear shall not be allowed on the jobsite.

(6) Shirts and Pants--Shirts covering the full trunk and shoulders are required. Tank tops or midriff shirts are not allowed. The shirtsleeve shall be a minimum of 4 inches (10 cm) in length.

Cutoff jeans or shorts shall not be worn on the jobsite. Pants shall cover the top of the boot when a person is standing.

Shirts or other items of clothing shall not have offensive language or images.

All employees exposed to vehicular traffic or mobile equipment, including surveyors, inspectors, spotters, signalmen, flagmen, and other construction trades, must wear high visibility fluorescent red, lime green, or orange in accordance with American National Standards Institute (ANSI)/International Safety Equipment Association (ISEA) 107-2010.

(7) Seat belts shall be worn by all personnel riding in vehicles, as well as heavy equipment operators and forklift operators. Those observed not wearing seat belts

may have their driving privilege revoked. Passengers riding in school buses not equipped with seat belts are permitted to do so.

(8) No riders other than the operator shall be allowed on any piece of mobile equipment unless designed for that purpose.

(9) Personnel are not allowed to ride in the back of pick-up trucks, on flat-bed trailers, or on any piece of mobile equipment not designed for that purpose.

(10) Hand protection is required to be worn by all employees in construction areas. The minimum general use glove must meet ANSI/ISEA 105-2016 Cut Level 2 or EN 388-2016 Level B. Employees engaged in wire or coaxial cable cutting, stripping, or grounding installation must wear gloves meeting ANSI/ISEA 105-2016 Cut Level 4 or EN 388-2016 Level D. Higher level cut-resistant gloves must be worn when employees are handling sharp material. Specialty gloves must be selected based on hazard assessment.

Fall Protection

(1) Fall protection is required 100 percent of the time when employees are exposed to a fall in excess of 6 feet from where there feet are located or when required by additional rules. One hundred percent fall protection is required whether the employee is climbing, traveling from Point A to Point B, connecting structural steel, or erecting scaffolds or other temporary platforms. No employee or work operation is exempt from the 100 percent fall protection requirement.

(2) When not protected by any other means of fall protection, such as safety nets or scaffold with proper guardrails, employees shall use full body harnesses, shock absorbing lanyards with double locking snap hooks, and an adequate anchorage (fall arrest equipment). To achieve 100 percent fall protection, employees may need to use a double lanyard system and/or vertical or horizontal lifelines, retractable lifelines, or other such approved devices.

(3) Fall arrest equipment shall be rigged so that employees can neither free fall more than 6 feet nor contact any lower object. Anchorage points for fall arrest equipment shall be capable of supporting 5,000 pounds per employee and be located above the employee's body harness attachment point where practicable. Anchorage points shall be independent of any anchorage being used to support or suspend scaffolds or other platforms. Rigging shall not be used for anchorage devices or be included within a Personal Fall Arrest System.

(4) When vertical lifelines are used, each employee shall be protected by a separate lifeline. The lifeline shall be properly weighted at the bottom and terminated to preclude a device such as a rope grab from falling off the line.

(5) Horizontal lifelines should be limited to two persons at one time between supports. Horizontal lifelines shall be designed, installed, and used under the supervision of a qualified person. The horizontal lifeline shall be designed to maintain a safety factor of at least two. Horizontal lifelines shall be designed by a qualified person (Professional Engineer) that shall provide design and use limitations. The lifeline shall be used in accordance with the design or manufacturer's requirement.

(6) Before each use, employees shall visually inspect all fall arrest equipment for cuts, cracks, tears or abrasions, undue stretching, overall deterioration, mildew, operational defects, heat damage, or acid or other corrosion. Equipment showing any defect shall be withdrawn from service and measures shall be taken to prevent the equipment from being used.

(7) All fall arrest equipment subjected to impacts caused by a free fall or by testing shall be removed from service and destroyed or managed so that it cannot be utilized.

(8) Employees shall store all fall arrest equipment in a cool dry place not subjected to direct sunlight. Storage areas shall be free from chemicals, potential sharp edges, etc. This includes temporary storage such as lunch and breaks.

(9) Employees shall not use fall arrest equipment until they have been properly trained in its use. Certification of this training shall be available to the Project ESH&S Manager for review.

(10) Foremen shall ensure that fall protection is available and used as required for all employees for whom they are responsible.

(11) Fall arrest equipment shall not be used for any other purpose, such as tow ropes or hoist lines.

(12) Proper guardrails shall be installed on open sides of all walkways and runways where the fall distance exceeds 6 feet. An assessment shall be made to determine if a guardrail is needed at a distance less than 6 feet.

(13) Proper guardrails shall be installed on all open sided floors where the fall distance exceeds 6 feet.

(14) All floor openings or floor holes shall be protected by guardrails or hole covers. If hole covers are used, they shall be strong enough to support the maximum intended load, secured against displacement, and properly labeled. If the cover is subject to vehicular traffic, it shall be capable of supporting at least two times the axle load of the largest vehicle expected to cross over it. On projects where multiple languages are spoken, symbols may be used to identify floor openings.

(15) When an employee is operating a scissor lift work platform, the lift shall have guardrails on all open sides and the door access chains or rails in place. If the lift has designed anchorage points, the employee(s) shall utilize a Personal Fall Arrest System.

(16) Employees operating aerial lifts shall wear a body harness and lanyard attached to the aerial lift. Employees shall not attach the lanyard to an independent structure.

(17) Employees riding in a crane-suspended work platform shall wear a body harness and lanyard attached to the grab rail of the platform or designed anchorage point.

(18) Employees working on wall forms or rebar shall wear a body harness and lanyard, in addition to a positioning device, when exposed to a fall in excess of 6 feet. Positioning devices shall be rigged to prevent a free fall greater than 24 inches.

(19) Stairs, ladders, or ramps shall be provided for all accessways where there is a change in elevation greater than 19 inches.

(20) When guardrails are used for fall protection, they shall consist of a top rail, intermediate rail, and toeboard. The top rail shall have a vertical height of 42 inches plus or minus 3 inches, the midrail shall be at 21 inches, and the toeboard must be at least 4 inches high. Guardrail systems shall be constructed so that there are no openings greater than 19 inches. When wood railings are used, the post shall be of at least 2 inch by 4 inch stock spaced not to exceed 8 feet, the top rail shall be of at least 2 inch by 4 inch stock, and the intermediate rail shall be of at least 1 inch by 6 inch stock. If pipe is used, it shall be at least 1-1/2 inch nominal diameter. If structural steel is used, it shall be 2 inch by 2 inch by 3/8 inch angles or equivalent. If wire rope is used for railings, it shall have a diameter of at least 1/2 inch and be stretched taut to allow no more than a 3 inch deflection. Guardrail systems shall be capable of supporting a force of at least 200 pounds applied within 2 inches of the top edge.

(21) Guardrail systems shall be constructed so that when a 200 pound force is applied in a downward direction, it will not deflect to a height less than 39 inches.

(22) If wire rope is used for top rails, it shall be flagged at no more than 6 foot intervals with high visibility material.

(23) Manila or synthetic rope shall not be used as guardrails.

(24) Employees shall not stand or sit on guardrails.

(25) Contractor shall comply with 29 CFR 1926.500-.503 Subpart M requirements.

Compressed Gases

(1) Care shall be exercised in handling all compressed gas cylinders. They shall not be dropped, jarred, or exposed to temperature extremes.

(2) Cylinders shall have the valve cap or valve protection device in place at all times, except when in actual use or connected to a welding set.

(3) Cylinders shall not be rolled and shall not be lifted by the valve or valve cap; a suitable cradle or other device shall be used.

(4) Cylinder contents shall be properly identified according to OSHA, Department of Transportation (DOT), and Compressed Gas Association guidelines.

(5) Cylinders not having fixed handwheels shall have keys, handles, or nonadjustable wrenches on the valve stems while the cylinders are in service.

(6) Compressed gas cylinders, whether full or empty, shall be stored and transported in an upright position and chained or otherwise secured so they cannot fall or be upset.

(7) Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease) a minimum distance of 20 feet or by a 5 foot high noncombustible barrier with at least a 30 minute fire rating.

(8) Cylinders shall not be placed where they might become part of an electric circuit or within 5 feet of an electrical outlet.

(9) Employees shall never force connections which do not fit, nor shall they tamper with the safety relief devices of cylinder valves.

(10) Before the regulator is removed from a cylinder, the valve shall be closed and all pressure released from the regulator.

(11) A leaking cylinder shall not be used. Such cylinders shall be taken outdoors away from sources of ignition. The supervisor shall be notified.

(12) A flame shall never be used to detect gas leaks.

(13) The recessed top of cylinders shall not be used as a place for tools.

(14) Oxygen cylinders:

- Oil, grease, or similar materials shall not be allowed to come in contact with any valve, fitting, regulator, or gauge of oxygen cylinders.
- Oxygen cylinders shall never be used as a substitute for compressed air.
- When in use, the valve should be opened fully in order to prevent leakage around the valve stem.

(15) Acetylene cylinders:

- Acetylene cylinders shall be protected from sparks, flames, and contact with energized electrical equipment.
- Acetylene cylinders shall not be opened more than 1-1/2 turns of the spindle and preferably no more than 3/4 of a turn.
- Employees shall not use acetylene in a free state at pressures higher than 15 psi.
- Flashback arrestors are required on all oxygen/acetylene fuel burning rigs. Arrestors are to be placed between the regulator and the hose connections and the torch-hose connections (if not already built into the torch assembly).

Welding and Cutting--General

(1) Before performing welding, cutting, grinding, or any other "hot work" in a hazardous area, employees shall obtain a Welding, Cutting, and Heating Permit (Figure 24) from their Contractor. Hazardous areas are those areas where there is the presence or the potential of the presence of flammable or combustible materials, liquids, gases, vapors, or dusts.

(2) Welding and cutting shall be performed only by experienced and properly trained persons. Before welding or cutting is started, the area shall be inspected for potential fire hazards.

(3) When welding or cutting in elevated positions, employees shall take precautions to prevent sparks or hot metal from falling onto people or flammable material below.

(4) Suitable fire extinguishing equipment shall be immediately available at all locations where welding and cutting equipment is used.

(5) Matches shall not be carried by welders or their helpers when they are engaged in welding or cutting operations.

(6) A fire watch shall be maintained whenever welding or cutting is performed in locations where combustible materials present a fire hazard. A fire check shall be made of the area not more than 1/2 hour after completion of welding.

(7) Where combustible materials such as paper clippings, coal, or wood shavings are present, the floor shall be swept clean for a radius of 35 feet before welding is performed. Combustible floors shall be kept wet or protected by fire-resistant shields. Where floors have been wetted down, personnel operating arc welding or cutting equipment shall be protected from possible shock.

(8) To protect his/her eyes, face, and body during welding, cutting, and grinding operations, the employee shall wear safety glasses, appropriate hearing protection, an approved helmet with proper fitted welding helmet or face shield, protective gloves, and protective clothing. Welding leathers shall be worn during all arc gouging operations and when oxygen/acetylene or plasma cutting overhead. Helpers or attendants shall wear proper eye protection and protective clothing as required. Other employees shall not observe welding operations unless approved eye protection is used.

(9) Proper eye protection shall be worn to guard against flying particles when the helmet or goggles are raised.

(10) Machinery, tanks, equipment, shafts, or pipes that could contain explosive or highly flammable materials shall be thoroughly cleaned and decontaminated before heat is applied.

(11) In dusty or gaseous spaces where there is a possibility of an explosion, welding or cutting equipment shall not be used until the space is adequately ventilated.

(12) Welders shall place welding cable, hoses, and other equipment so that it is clear of passageways, ladders, and stairways.

(13) Where the work permits, the welder should be enclosed in an individual booth or shall be enclosed with noncombustible screens. Workers or other persons adjacent to the welding areas shall be protected from rays by shields or shall be required to wear appropriate eye and face protection.

(14) After welding or cutting operations are completed, the welder shall mark the hot metal or provide other means of warning other workers.

(15) Potentially hazardous materials used in fluxes, coatings, and covering, and filler metals used in welding and cutting are released to the atmosphere during welding or cutting operations. While welding or cutting, employees shall use adequate ventilation or approved respiratory protection equipment. Employees shall take special precautions when using materials that contain cadmium, fluorides, mercury, chlorinated hydrocarbons, stainless steel, zinc, galvanized materials, beryllium, and lead. Employees shall refer to their company's Hazard Communication Program for specific requirements pertaining to the above listed hazardous materials. Compliance with the OSHA hexavalent chromium standard is mandatory.

(16) Gas Welding and Cutting--Only approved gas welding or cutting equipment shall be used.

(17) Approved backflow check valves shall be used on gas welding rigs in both gas and oxygen lines.

(18) Welding hose shall not be repaired with tape.

(19) Matches shall not be used to light a torch; a torch shall not be lighted on hot work. A friction lighter or other approved device shall be used.

(20) Oxygen or fuel gas cylinders shall not be taken into confined spaces.

(21) Electric Welding--Only approved electric welding equipment shall be used.

(22) The electric welding machine shall be grounded in accordance with the manufacturer's specifications before use.

(23) Rules and instructions supplied by the manufacturer or affixed to the machine shall be followed.

(24) Welders shall not strike an arc with an electrode whenever there are persons nearby who might be affected by the arc.

(25) When electrode holders are to be left unattended, the electrodes shall be removed and the holders shall be so placed or protected that they cannot make electrical contacts with employees or conducting objects.

(26) When the welder must leave his or her work or stop work for more than an hour, or when the welding machine is to be moved, the power supply switch to the equipment shall be opened.

(27) Grounding shall be provided to the piece being welded.

Rigging Equipment

(1) All rigging equipment shall be of sufficient strength and of proper type and shall be safe for its intended use.

(2) Rigging equipment shall not be loaded beyond its rated capacity.

(3) Before each use, all slings, fastenings, and attachments shall be inspected for damage or defects. Damaged or defective equipment shall be immediately removed from service. Periodic, documented inspections on such equipment are also required.

(4) Makeshift lifting devices formed from bolts, rods, or reinforcing steel shall not be used.

(5) Slings shall not be shortened with knots, bolts, or other makeshift devices.

(6) Slings used in a basket hitch shall have the load balanced to prevent slippage.

(7) Slings shall be securely attached to the load by the use of hooks with retaining devices or the use of shackles or other positive latching device.

(8) Slings shall be padded or protected from the sharp edges of their loads.

(9) A sling shall not be pulled from under a load when the load is resting on the sling.

(10) Slings shall be long enough to provide the maximum practical angle between the sling leg and the horizontal plane of the load.

(11) Shackle pins shall never be replaced with bolts or other non-approved devices.

(12) Only hooks with approved retaining devices shall be used. Hooks shall never be rigged so that they are point loaded at the tip of the hook unless they are designed for that purpose. The load shall be securely seated in the saddle of the hook.

(13) When eye bolts are used, care shall be taken to ensure that the bolt is not side loaded.

(14) Chain falls, come-alongs, and other such devices shall not be loaded beyond their rated capacities.

(15) Chain falls, come-alongs, and other such devices shall always be rigged for a straight pull.

(16) The chain or hoist cable for chain falls, come-alongs, or other such devices shall not be wrapped around a load and used in place of a sling unless specifically designed for that purpose.

(17) Special rigging devices and equipment such as spreader beams, clamps, etc., shall be designed, proof tested prior to use to 125 percent of their rated load, and marked with the safe working load.

Excavations

(1) Before excavation work begins, an excavation permit shall be obtained. A separate permit must be obtained for each excavation.

(2) All excavations 5 feet or deeper or less than 5 feet in unstable soil shall be sloped, shored, or shielded to prevent cave-ins.

(3) All excavations 4 feet or deeper shall have a stairway, ladder, ramp, or other safe means for access into the excavation with no more than 25 feet of travel in any direction.

(4) All excavated and available material shall be retained 2 feet or more from the edge of the excavation.

(5) All excavations shall be barricaded with the appropriate barrier tape and other protective devices as required.

(6) When employees enter an excavation that may be considered a hazardous environment by site safety representatives, they must wear proper personal protective equipment.

(7) Spotters must be used while performing any trenching or excavating with powered mechanical excavating equipment. This spotter must be stationed adjacent to the excavation to avoid the operations of the equipment. The spotter is responsible for

visually identifying any obstruction while the equipment is excavating and for alerting the operator immediately if any obstructions are observed. If the spotter leaves the excavation area, excavation efforts must be stopped immediately until the spotter returns. Spotters must immediately stop work if an unknown utility is discovered during powered mechanical excavating.

(8) The use of mechanical digging equipment is not allowed within 18 inches of the utility regardless of what it is (electrical, gas, water, sewer, etc.). Hand digging, hydroexcavating, or other safe means of excavating must be used to locate utilities and work around exposed utilities.

Safe Supports and Scaffolds

(1) No employee, nor any material or equipment, shall be supported or permitted to be supported on any portion of a pole structure, scaffold, ladder, walkway, or other elevated structure, crane or derrick, etc., without its first being determined that such support is adequately strong and properly secured in place.

(2) Employees shall check all scaffolding before use to ensure that it is of sufficient strength and rigidity to safely support the weight of persons and material to which it will be subjected.

(3) Employees shall not use a scaffold over 6 feet in height unless a standard guardrail, with mid-rail and toe-board, is present to provide adequate employee protection.

(4) Scaffold planks shall be secured in place and shall extend over their end supports by not less than 6 inches (unless cleated) nor more than 12 inches.

(5) Scaffolds shall not be moved without first removing all loose tools, materials, and equipment resting on the scaffold deck.

(6) The footing or anchorage points for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks shall not be used to support scaffolds or planks.

(7) Scaffolds shall be erected level and plumb and rigidly braced to prevent swaying and displacement.

(8) Scaffolds shall not be altered or moved horizontally while being used or occupied except when specifically designed for such use. Movable scaffolds shall have the casters or wheels locked to prevent movement.

(9) The width of all scaffolds, ramps, and platforms shall be sufficient to prevent congestion of persons, materials, or equipment; and, in no case, shall they be less than 18 inches wide.

(10) Synthetic or natural fiber rope shall not be used as guardrails.

(11) Employees working on suspended scaffolds shall be protected by an independent lifeline, body harness, and a lanyard.

(12) Safe access shall be provided for all scaffolds. Structural members should not be used as a means of access. Fall protection is required on scaffold access ladders when access to the work platform exceeds 12 feet.

(13) Employees shall not use a scaffold unless it is properly tagged according to the project scaffold tagging procedure.

(14) When scaffolding is initially erected, an evaluation of the scaffold location and intended use must be completed for the protection of others working below. Where a potential exists for objects to fall through the guardrails of the scaffold to a lower level, netting, screening, paneling or sheeting, as appropriate, must be secured on the inside of the scaffold guardrails. The material must remain in place and be maintained while the potential for falling objects exists.

Ladders--General

(1) Wooden ladders shall not be painted so as to obscure a defect in the wood; only a clear, nonconductive finish shall be used.

(2) All ladders shall be inspected frequently and regularly. Ladders with weakened, broken, or missing steps; broken side rails; or other defects shall be tagged and removed from service.

(3) All portable ladders must be of sufficient strength and construction for their intended use and shall, at a minimum, be classified as IA or IAA.

(4) Portable metal ladders shall not be used in the vicinity of energized electrical circuits. (Exception: Such ladders may be used in specialized work, such as high voltage substations, where nonconductive ladders might present a greater hazard. These ladders shall be properly marked.) Areas around ladders, scaffolding, and aerial lifts shall be properly barricaded.

(5) Ladders shall not be placed in front of a door that opens toward the ladder, unless the door is open, locked, or guarded. Areas around ladders, scaffolding, and aerial lifts shall be properly barricaded.

(6) When ascending or descending ladders, employees shall have both hands free and shall face the ladder.

(7) Only one employee shall work from a ladder at one time (except for hook type ladders). If two employees are required, a second ladder shall be used.

(8) Ladders shall not be used as scaffold platforms.

(9) Boxes, chairs, etc., shall not be used as ladders.

(10) Employees shall not use a ladder until they have been properly trained in its use. Documented inspections of ladders are required on a periodic basis.

Straight Ladders

(1) Portable straight ladders shall not be used without nonskid bases.

(2) The ladder shall be placed so that the distance between the bottom of the ladder and the supporting point is approximately 1/4 of the ladder length between supports.

(3) Straight ladders shall not be climbed beyond the third step from the top.

(4) When employees work from a portable ladder, the ladder must be securely placed, held, tied, or otherwise made secure to prevent slipping or falling.

(5) When dismounting from a ladder at an elevated position (as at a roof), the employee shall ensure that the ladder side rails extend at least 3 feet above the dismount position, or that grab bars are present.

(6) Employees shall wear a body harness and lanyard, and tie off to a secure anchor whenever both hands must be used for the job or whenever employees are exposed to a fall in excess of 6 feet.

(7) Ladders shall not be spliced together to form a longer ladder.

(8) A ladder shall not be placed against an unsafe support.

(9) Employees climbing a ladder with a fall exposure greater than 12 feet shall be protected by an approved cage, ladder climbing device, or by the use of a body harness, lanyard, or lifeline system.

Step Ladders

(1) The top two steps shall not be used.

(2) Step ladder legs shall be fully spread and the spreading bars locked in place.

(3) Step ladders shall not be used as straight ladders.

(4) When an employee is working on a step ladder over 6 feet high, the employee shall use a body harness and lanyard attached to a substantial anchor.

Material Handling

(1) An employee shall obtain assistance in lifting heavy objects or shall use power equipment to lift them.

(2) When two or more persons carry a heavy object that is to be lowered or dropped, there shall be a prearranged signal for releasing the load.

(3) When two or more persons are carrying an object, each employee, if possible, should face the direction in which the object is being carried.

Note: The right way to lift is easiest and safest. Crouch or squat with the feet close to the object to be lifted, secure good footing, take a firm grip, bend the knees, keep the back vertical, and lift by bending at the knees and using the leg and thigh muscles. Employees shall not attempt to lift beyond their capacity. Caution shall be taken when lifting or pulling in an awkward position.

(4) Employees should avoid twisting or excessive bending when lifting or setting down loads.

(5) When moving a load horizontally, employees should push the load rather than pull it.

(6) When a task is performed that requires repetitive lifting, the load should be positioned to limit bending and twisting. The use of lift tables, pallets, and mechanical devices shall be used in these instances.

(7) When using such tools as screw drivers and wrenches, employees should avoid using their wrists in a bent (flexed), extended, or twisted position for long periods of time. Their wrists should be maintained in a neutral (straight) position.

(8) When gripping, grasping, or lifting an object such as a pipe or a board, an employee's whole hand and all the fingers should be used. Gripping, grasping, and lifting with just the thumb and index finger should be avoided.

Hand Tools

(1) All tools, regardless of ownership, shall be of an approved type and maintained in good condition. (Tools are subject to inspection at any time. A supervisor has the authority and responsibility to condemn unserviceable tools, regardless of ownership.)

(2) Defective tools shall be tagged to prevent their use and shall be removed from the jobsite.

(3) Employees shall always use the proper tool for the job performed.

(4) Hammers with metal handles, screwdrivers, knives with metal continuing through the handle, and metallic measuring tapes shall not be used on or near energized electrical circuits or equipment.

(5) Tools shall not be thrown from place to place or from person to person; tools that must be raised or lowered from one elevation to another shall be placed in tool buckets or firmly attached to hand lines.

(6) Tools shall never be placed unsecured on elevated places.

(7) As impact tools such as chisels, punches, drift pins, etc., become mushroomed or cracked, they shall be dressed, repaired, or replaced before further use. Jackhammer points shall not be used for any other application besides use with a jackhammer.

(8) Chisels, drills, punches, ground rods, and pipes shall be held with suitable holders or tongs (not with the hands) while being struck by another employee.

(9) Shims shall not be used to make a wrench fit.

(10) Wrenches with sprung or damaged jaws shall not be used.

(11) Pipe shall not be used to extend a wrench handle for added leverage unless the wrench was designed for such use.

(12) Tools shall be used only for the purposes for which they have been approved.

(13) Tools with sharp edges shall be stored and handled so that they will not cause injury or damage. They shall not be carried in pockets.

(14) Wooden handles that are loose, cracked, or splintered shall be replaced. The handle shall not be taped or lashed with wire.

(15) Open bladed tools/knives (including multi-tools, pocket knives, fixed blade knives, utility knives, box cutters, etc.) shall not be used by employees on-site unless specifically approved by the Project ESH&S Manager. Approval to use the open bladed tool/knife must be in writing and shall detail the hazard(s) associated with the tool/knife and the ways the hazard(s) will be controlled or eliminated.

(16) All cutting tools such as saws, wood chisels, approved knives, or axes shall be kept in suitable guards or in special compartments.

(17) Tools shall not be left lying around where they may cause a person to trip or stumble.

(18) The insulation on hand tools shall not be depended upon to protect users from shock.

(19) All tools will be tethered to prevent dropping. Ratchet tools shall have locking mechanism to prevent accidental dislodgement of the socket. Tool bags will have a method of closing through a zipper, drawstring, or velcro to prevent tools and supplies from falling from the tool bag during ascent and descent activities. Tool bag hoisting ropes and hooks shall be inspected and hooks having a self-closing gate in working order. Care shall be taken when working from elevated work platforms such as grating, scaffolding, and man baskets to prevent tools and materials from falling through the openings not only by tool lanyards, but also by use of fire blankets, plywood, or other suitable material. When scaffolding is initially erected, an evaluation of the scaffold location and intended use must be completed for the protection of others working below. Where a potential exists for objects to fall through the guardrails of the scaffold to a lower level, netting, screening, paneling or sheeting, as appropriate, must be secured on the inside of the scaffold guardrails. The material must remain in place and be maintained while the potential for falling objects exists. The danger area shall be barricaded or guarded to keep personnel out of any possible drop zones.

Portable Power Tools

(1) The noncurrent-carrying metal parts of portable electric tools such as drills, saws, and grinders shall be effectively grounded when connected to a power source unless:

- The tool is an approved double-insulated type.
- The tool is connected to the power supply by means of an isolating transformer or other isolated power supply, such as a 24 volt dc system.

(2) All grinders shall be provided with a deadman power switch.

(3) All powered tools shall be examined before use to ensure general serviceability and the presence of all applicable safety devices. The electric cord and electric

components shall be given an especially thorough examination. Periodic documented inspections of all portable electric tools are required.

(4) Powered tools shall be used only within their capability and shall be operated in accordance with the instructions of the manufacturer.

(5) All tools shall be kept in good repair and shall be disconnected from the power source while repairs are being made.

(6) Electrical tools shall not be used where there is a hazard of flammable vapors, gases, or dusts.

(7) All power tools and cord sets shall be protected by GFCIs.

(8) All cords shall be routed so they will not come in contact with any steel.

(9) Cords shall not be tied into knots.

(10) Battery powered port-a-band saws shall have dual trigger feature requiring both hands to be used to engage the saw.

Pneumatic Tools

(1) Compressed air and compressed air tools shall be used with caution.

(2) Pneumatic tools shall never be pointed at another person.

(3) Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected.

(4) Safety clips or retainers shall be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

(5) Compressed air shall not be used for general cleaning purposes. Vacuum cleaning is an acceptable alternative.

(6) Compressed air shall not be used to blow dust or dirt from clothing. Vacuuming methods are to be used for these cleaning purposes.

(7) The manufacturer's safe operating pressure for hoses, pipes, valves, filters, and other fittings shall not be exceeded.

(8) The use of hoses for hoisting or lowering tools shall not be permitted.

(9) All hoses exceeding 1/2 inch inside diameter shall have a safety device (excess flow check valve) at the source of supply or branch line to reduce pressure in case of hose failure or disengagement of a connection.

(10) Before adjustments are made or air tools are changed, unless they are equipped with quick-change connectors, the air shall be shut off at the air supply valve ahead of the hose. The hose shall be bled at the tool before the connection is broken.

(11) Eye protection, foot protection, and other protective devices shall be worn when their use could reduce the possibility of injury.

(12) Pneumatic tools shall be operated only by competent persons who have been trained in their use.

(13) A pneumatic tool used where it may contact exposed live electrical parts shall have a nonconductive hose and an accumulator to collect moisture.

(14) Employees shall not use any part of their bodies to locate or attempt to stop an air leak.

Chainsaws

(1) Always follow the manufacturer's instructions for chainsaw operation and maintenance.

(2) Ensure the chainsaw engine is the appropriate size for the project.

(3) Wear Black & Veatch required PPE which includes the use of chaps when using a chainsaw.

(4) Hearing protection may be required depending on noise generated from equipment and location or reverberation of sound.

(5) Check that all safety devices are working properly and do not operate a chainsaw that is damaged or has disengaged safety devices.

(6) Start the saw on the ground or another firm support with the brake engaged.

(7) Chainsaw shall not be started within 10 feet of the fueling area.

(8) Keep both hands on the handles and maintain secure footing.

(9) Plan where the object will fall; ensure that the fall area is free of hazards; and avoid felling an object into other objects.

(10) Plan the cut; watch for objects under tension; use extreme care to bring objects safely to the ground.

(11) Be prepared for kickback; avoid cutting in the kickback zone and use saws that reduce kickback danger (chain brakes, low kickback chains, guide bars, etc.).

(12) Do not cut directly overhead.

(13) Shut off or release throttle prior to retreating.

(14) Gasoline powered chainsaws shall be equipped with a continuous pressure throttle control system that will stop the chain when pressure on the throttle is released.

(15) Shut off or engage the chain brake whenever the saw is carried more than 50 feet or across hazardous terrain.

(16) Chainsaws, when not in use, shall be properly protected with a blade guard or case.

Cranes, Derricks, Hoisting Equipment

(1) Only authorized persons shall be permitted in the cab or on the equipment. Only those designated persons who are trained and qualified shall operate the hoisting equipment.

(2) No person shall be permitted to ride the hook, sling, or load of any hoisting equipment.

(3) Load limits specified by the manufacturer shall not be exceeded under any circumstances.

(4) Operating and maintenance procedures specified by the manufacturer shall be followed.

(5) Before a lift is attempted, the lifting mechanism shall be level and firmly supported with the hoist line centered over the center of gravity of the load to be lifted.

(6) No load shall be lifted until its weight has been determined and ground conditions are suitable with proper sloping, compaction, and firmness.

(7) For the first lift of each day, the load shall be test lifted and the brakes checked (load lifted several inches and then tested).

(8) With every load, the slings and bindings shall be checked and shall be readjusted as necessary to ensure safety and stability.

(9) Signals to the equipment operator shall be given by one person designated to perform this task. The operator shall, however, obey a "Stop" signal given by anyone.

(10) No employee shall be under a suspended load or inside the angle of a hoist line. No employee shall stand or work near a cable, chain, or rope under tension.

(11) Hoist lines, ropes, or wire cables shall not be guided by hand when an employee is standing within reach of the drum or sheave.

(12) Wire rope loops shall be made by proper splicing or mechanical clamping of the tail section. Wire rope clips shall not be used to form eyes in wire rope bridles or slings.

(13) Operators shall not leave their position at the controls of cranes, hoists, derricks, or other lifting devices while the load is suspended. Operators found sleeping while in the cab will be removed from the Project.

(14) Operators of cranes, derricks, hoists, and other hoisting equipment shall exercise extreme caution when close to energized lines or equipment. The operator shall keep the equipment at least 10 feet away from all lines energized up to 50 kV and 0.4 inch more for each 1 kV over 50 kV.

(15) Tag lines shall be used on all loads. All tag lines are to be positioned and maneuvered to avoid contact with objects that may impact the safety of the load being lifted.

(16) All spreader bars shall be tagged by manufacturer with the rated capacity.

(17) All hydraulic cranes with over 15 ton capacity shall be equipped with functioning anti-two blocking devices and a functioning load moment indicator.

(18) A report (lift plan) shall be required prior to all critical lifts. A critical lift is a nonroutine lift/pick that by classification and characteristics requires in-depth and additional planning to ensure safe hoisting execution. All lifts that reach 85 percent of crane capacity or greater shall be sent for review and approved by the Black & Veatch Crane Specialty group. Lifts shall not be allowed if the lifting device reaches 90 percent of the manufacturer's rated capacity. Deviations must be approved by the Director of ESH&S.

A critical lift plan shall be developed prior to making a lift when at least one or more of the following criteria is present:

- Any lift that reaches 75 percent of the hoisting equipment's rated capacity.
- Any lift in excess of 25 tons (50,000 pounds).
- Any lift requiring the use of more than one piece of hoisting equipment including single crane lifts that utilize two hoist drums to manipulate a load.
- Any lift or crane that is within 20 feet of an energized power line.
- Any lift over an occupied building (not applicable during building construction).
- Any lift over moving capital equipment.
- Any lift that involves hoisting personnel.
- Any lift in which the hoisting equipment encroaches on highways, roadways, or railroad rights-of-way, unless the corridor is shut down to traffic.
- Any lift where payloads are required to swing directly over or under energized power lines.
- Helicopter lifts over Federal Aviation Administration defined congested areas.
- Any lift that the crane operator or lift director deems critical.

(19) All cranes shall have anti-two blocks.

(20) The use of load movement indicators (LMI) on all hydraulic cranes in excess of 15 ton capacity including, but not limited to truck, rough terrain, and crawler cranes.

(21) Outriggers shall be deployed according to manufacturer's requirements.

(22) Outrigger pads shall be in good condition and used at all times.

(23) Appendix B (Cranes and Derricks Procedure) will also be a requirement of this manual.

Flammable and Combustible Liquids

(1) Smoking or open flames are not permitted in posted areas or within 50 feet of an operation using flammable liquids.

(2) Flammable liquids (Category 1, 2, 3) must be kept in a vapor tight closed container when actually not in use.

(3) At least one 4A60BC fire extinguisher must be kept between 25 feet to 75 feet from tanks.

(4) Waste saturated with flammable liquids must be disposed of in self-closing metal containers.

(5) When transferring flammable liquids from one container to another container, the two containers must be electrically bonded and grounded to the earth.

(6) Liquid fuel engines and heating devices must be shut off and allowed to cool to the touch before refueling.

(7) Containers of flammable liquids and fueled heating devices must not be used, stored or located below grade.

(8) Any spill must be promptly stopped and the supervisor contacted. The employee shall initiate cleanup of the spill to the extent capable.

Confined or Enclosed Spaces

(1) Only employees who have been properly trained on the hazards associated with confined space work shall be allowed to enter a confined space.

(2) Before entering a confined space, employees shall obtain a Confined Space Entry Permit (Figure 22) from the Contractor.

(3) Before any entrance cover to a confined space is removed, it shall be determined that there are no temperature or pressure differences, or other hazardous conditions that may injure the employees removing the cover.

(4) When covers are removed from confined spaces, the opening shall be guarded by a railing, temporary cover, or other temporary barrier.

(5) Before entering a confined space, employees shall test all levels of the confined space for the presence of flammable or toxic gases and vapors or an oxygen deficient atmosphere.

(6) If flammable or toxic gases or vapors are detected or if an oxygen deficiency is found, forced ventilation shall be used to maintain oxygen at a safe level and to prevent a hazardous concentration of flammable or toxic gases and vapors.

(7) While work is being performed in the confined space, a person with basic first aid training shall be immediately available to render emergency assistance if there is reason to believe that a hazard may exist in the space or if a hazard exists.

(8) Entry into a confined space with an unsafe atmosphere shall be avoided if at all possible. Employees required to enter a confined space with an unsafe atmosphere shall be equipped with a fresh air breathing apparatus, body harness, and attended lifeline.

(9) Electric welding, gas welding, cutting, or any other hot work shall not be performed on the interior or exterior, or near the openings of any confined space which may contain flammable or explosive gases or vapors until the space has been properly cleared.

(10) Compressed gas bottles shall not be taken into a confined space.

(11) Safe access to the confined space shall be maintained at all times. If possible, all cords, hoses, leads, etc., shall be routed through an entrance other than the employee access into the confined space.

(12) Before employees are allowed to enter a confined space, all electrical and mechanical energy sources that could affect the employees working in the space shall be physically rendered inoperative, locked out, and tagged. If required, the space shall be drained, vented, and cleaned.

(13) Contractors are responsible for supplying workers with the proper air monitoring equipment.

Heaters

(1) UL approved salamanders, Redi heaters, and space heaters are the only approved heaters on the jobsite.

Heaters shall be used in accordance with 29 CFR 1926.154.

(2) Job-made heaters, solid fuel salamanders, and open fires are prohibited on the jobsite.

Powered Industrial Trucks (Forklifts)

(1) All powered industrial truck operators shall be trained and certified by their employer for the type of truck to be used.

(2) Training will include both formal instruction and practical training.

(3) At a minimum, formal training will include instruction on the following:

- Hazards associated with the type of truck.
- Hazards of the workplace.
- General hazards that apply to most trucks.
- Safe operation and maintenance.
- Manufacturer's operating instructions.

(4) Retraining is required after an accident or a near miss.

(5) The Equipment Operator's Daily Checklist (Figure 29) will be completed before each shift and any hazardous condition corrected before use.

Steel Erection

(1) Fall protection is required 100 percent of the time for all steel erection activities when employees are exposed to a fall in excess of 6 feet or when required by additional rules.

(2) Cranes involved in steel erection activities shall be inspected prior to each shift by a competent person.

(3) The crane operator shall have the authority to stop work operations that are unsafe.

(4) All loads shall be rigged by a qualified rigger.

(5) A qualified rigger shall inspect the rigging prior to each shift in accordance with 29 CFR 1926.1404 (r)(1).

(6) No employee shall work directly below a suspended load except for employees engaged in the initial connection of the steel or employees necessary for the hooking and unhooking of the load.

(7) Bundle packaging and strapping shall not be used for hoisting unless specifically designed for that purpose.

(8) Uninstalled metal decking shall be secured against displacement.

(9) Roof and floor hole openings shall be decked over or protected in accordance with 29 CFR 1926.501(d)(4).

(10) Metal decking holes and openings shall not be cut until immediately prior to being permanently filled with the equipment or structure needed or intended to fulfill its specific use or shall be immediately covered.

(11) All covers shall be capable of supporting twice the weight of any loads that may be imposed on them at any one time, secured against displacement, and shall be marked to warn of the hazard. Smoke domes and skylight fixtures that have been installed are not considered covers for openings.

(12) All columns shall be anchored by a minimum of four anchor rods.

(13) Anchor rods shall not be repaired, replaced, or field modified without the approval of the project engineer of record. If an employee notices damaged anchor rods, he/she shall immediately notify his/her supervisor.

(14) No construction loads shall be placed on steel joists until all bridging is installed and all joist bearing ends are attached.

(15) On systems engineered metal buildings, joist connections shall be made on both ends before releasing hoisting cables, allowing personnel on joists, and allowing any construction loads on joists.

(16) Purlins and girts shall not be used as anchorage points for fall arrest systems unless written approval is obtained from a qualified person.

(17) Any time a Contractor removes grating or creates an open hole, a Grating Removal/Open Hole Permit (Figure 42) must be submitted no less than 24 hours in advance of removal of the grating creating the hole. All necessary safety precautions, such as, but not limited to, placement of a hard barricade, placement of

adequate warning signage, etc., shall be met prior to removal of the grating or creation of the hole. At no time shall grating removal or creation of a hole prevent adequate egress for other work operations in the area. The permit shall be completed after the grating is replaced and the hole adequately filled.

(18) Christmas treeing (multiple lifts at one time) is permissible with strict adherence to 29 CFR 1926.753. Prior to occurring, the plan, employee training, and other supporting documentation shall be submitted to the Project ESH&S Manager.

Mobile Equipment

(1) Seat belts shall be worn by all personnel riding in vehicles (except for school buses without installed seat belts), as well as heavy equipment operators and forklift operators. Those observed not wearing seat belts may have their driving privilege revoked.

(2) Passengers riding in school buses on construction projects not equipped with seat belts are permitted to do so. In addition, they have to be seated no more than two to a seat with no one standing. This is only allowed on private property, operated below the posted site speed limit, and no more than 20 miles per hour. School buses are not to be used to transport cargo.

(3) No riders other than the operator shall be allowed on any piece of mobile equipment unless designed for that purpose.

(4) Personnel are not allowed to ride in the back of pick-up trucks, on flat-bed trailers, or on any piece of mobile equipment not designed for that purpose.

(5) Backup alarms shall be used where the operator has a restricted view to the rear of the equipment and shall be loud enough to be heard over the surrounding noise levels.

(6) Backup cameras--Backup cameras or proximity alert systems are required on all skid steers.

- The camera feed shall be on and functional at all times. Cameras and monitors shall be purpose built and suitable for the environmental conditions. The placement of the camera and video feed shall be placed in a manner to not impact machine operations The device shall not be turned off or disabled by the operator.
- Proximity alarms shall be placed in a manner that the device will alarm when the machine is within 6 feet (2 meters) of an object to the rear/back of the machine. The device shall be on and functional at all times. Proximity devices shall be purpose built and suitable for environmental conditions. The placement of devices shall not impact machine operation. The warning alarm shall be clearly audible when the machine is operating. The device shall not be turned off or disabled by the operator.

(7) To avoid turnover of trailers while dumping material, tractor must be lined up straight with trailer. Tractor and trailer must be on firm, compacted and level ground. Avoid dumping in strong winds. Line trailer up with wind to avoid possible turnover from cross winds. Operator should warn all persons to stand clear at least

35 feet (11 meters) from trailer being raised and lowered. Should trailer start to tilt, move control immediately to "lower" position. Under inflated tires can cause instability when dump. Always check tires to make sure they are properly inflated. Operator must stay at the controls while dumping is in progress.

(8) Spotter/Operator Agreement

To clearly identify a designated spotter for equipment movement covered within this section, a spotter/operator agreement shall be executed when a spotter is designated. Project may choose various methods to accomplish this requirement, for example:

- Written agreement (document signed by the operator and spotter),
- Identifying vest, band, glove(s), hard hat/helmet that clearly designates the spotter utilized for the task,
- Hand over or transfer of a placard, laminated card, or other identifier where the spotter is clearly identified, and the operator and spotter have acknowledged responsibilities.

Regardless of the methodology used on the project, the operator shall not move the equipment until this agreement has been achieved. The spotter shall pay full attention to the spotter duties until the task is complete and both (operator and spotter) have verbally communicated that the spotter is no longer needed.

(9) Maneuvering and Spotters--To avoid injury to persons and to prevent property damage, extreme caution must be exercised when maneuvering mechanized equipment or vehicles (aerial lifts, cranes, forklifts, trucks, cars, skid steers, trackhoes, backhoes, etc.). A spotter must be used to assist the operator/driver in safely maneuvering the equipment.

When maneuvering equipment, the operator/driver must do the following:

- Keep a constant lookout during the entire time he/she is maneuvering.
- Carefully check any blind areas.
- Maneuver slowly.
- If in an area of the project where a spotter is required, obtain a spotter prior to moving.

Each site shall develop a map that clearly defines any areas of the project where the use of a spotter is **not required**. This map shall be kept current, posted, and appropriately communicated to all personnel on-site. The map shall be developed and maintained by the Construction Manager, in concert with Safety, and approved by the Project Field Manager.

Criteria for spotter required areas include the following:

- Maneuvering equipment within 6 feet of stationary objects, construction activities, or other pieces of equipment.

- Maneuvering equipment in areas with obstructions or where work activities are occurring.
- Maneuvering equipment within 50 feet of overhead power lines (or other overhead obstructions such as piperacks, communication cables, bridges, etc.).
- Unless otherwise noted on the map, craft and staff parking lots are exempt from spotter requirements.

Except as defined by the site map, **spotters shall be used whenever the equipment is being maneuvered** (forward, backward, up, down, rotating, etc.). This includes all mechanized mobile equipment that is used on construction projects (aerial lifts, cranes, forklifts, trucks, cars, skid steers, trackhoes, backhoes, etc.). As part of the daily STA, supervisors must ensure the usage of spotters for mobile mechanized equipment and plan accordingly. If spotters are not included in the plan, the discipline superintendent must approve the plan on the STA before work begins. Spotters must be trained on their duties and identified to the equipment operator so proper communication and instruction occurs. Vehicles and equipment equipped with backup cameras and proximity alert systems that warn operators and drivers of hazards when backing may be substituted for spotters where appropriate.

Fatigue Management

Fatigue Planning

For extended work hours and abnormal work shifts where "safety sensitive" tasks are performed, the Contractor will develop and implement a fatigue management plan that contains strategies to effectively control the risks of fatigue. The plan shall be developed by analyzing the respective task and shall set out a risk management approach on the basis of regulatory requirements and consultation with the workforce. The plan will, at a minimum, address the following:

- Identify the hazards of fatigue.
- Assess the risks of fatigue.
- Implement effective risk control measures.
- Regularly monitor and review the effectiveness of the controls.

The fatigue management plan shall outline the following details as a minimum:

- The times of day that work takes place.
- The length of time spent at work and in work-related duties.
- Type and duration of a work task and the environment in which it is performed.
- Equipment to be utilized to perform a task.
- The quantity of rest obtained prior to and after a work period.

Fatigue Controls

The fatigue management plan shall consider controls to reduce the risks of fatigue. To keep personnel rested and alert, the following work hour guidelines shall be followed by all contractors and approvals shall be provided before the hours are served:

- Employees (Non-DOT Affected):
  - Between 14 hours to 16 hours per day in a 24 hour period requires Project Manager level approval.
  - Workers shall not work over 13 consecutive days. After 13 consecutive days, the worker must break for 48 hours.
  - Workers must not work over 70 hours in 7 days without Project Manager level approval.
- DOT Affected Worker Requirements:
  - No more than 14 hours per day in a 24 hour period.
  - Workers must not work over 70 hours in 7 days without a 48 hour break.

Fatigue Monitoring

Supervisors shall monitor working hours and ensure that worker hours are in accordance with regulatory requirements and shall monitor employees for signs of fatigue. Work hours should be monitored by observing affected employees, reviewing timesheets, and reviewing electronic card systems on a regular basis. Supervisors shall ensure that employees demonstrating signs of fatigue are consulted immediately and removed from safety-sensitive operations. Additionally, employees shall notify their supervisor should they begin to demonstrate signs of fatigue or notice other employees demonstrating signs of fatigue. Supervisors shall ensure that appropriate actions are taken for employees reporting signs of fatigue to safeguard employees.

Heat Stress Prevention

Contractors are required to have a Heat Stress Prevention Plan which follows governmetal requirements. Information shall be provided in the orientation and during specific heat illness prevention training provided by the contractor.

The purpose of this plan is to identify the hazards affiliated with extreme heat. The plan should be communicated to all affected employees to prevent heat-related illnesses.

This plan will identify the designated person that is assigned specific tasks, provide specific details, and determine the form of communication for carrying out the plan.

Reporting Accidents and Injuries

All accidents and injuries are to be reported to the Contractor's Safety Representative on the same day they happen.

Violations

Penalties for willful or repeated violation of the Project Occupational Safety and Health Rules by an individual shall include discharge from the Project.

If there is a conflict between project safety and health rules, Contractor's Safety Program rules, and governmental regulations, the most restrictive shall apply.

1.10 Safety Policy Memorandum

From time to time, as the need is identified, Overland Contracting Inc. will issue safety policy memoranda that affect the entire project.

Safety policy memoranda will be identified by a number and a specific safety subject, such as Safety Policy Memorandum 1 (Scaffolding).

Safety policy memoranda will be issued to all persons who have received a Project Loss Control Manual. (Insert as new pages at the end of this section.)

The person responsible for the receipt and maintenance of the manual shall also be responsible for informing his/her firm's employees and Contractors of the contents of the safety policy memoranda.

Safety policy memoranda will have an effective date and an expiration date. Prior to the expiration date, the Project ESH&S Manager will review the memorandum and either reissue or direct that the memorandum be removed from the manual.

2.0 Emergency Procedures

2.1 Project Emergency Response Procedures

In order to facilitate a prompt and orderly response to site emergencies, Contractors shall comply with the emergency procedures outlined in this section.

2.2 Introduction

In any emergency situation on the Project site, the emergency response will take the form of an Incident Command System. The Project ESH&S Manager will assume the role of Incident Commander. If the Project ESH&S Manager is unavailable, the Project Field Manager would assume this role. If this individual is unavailable, the next highest-ranking Overland Contracting Inc. manager would assume the role. In the absence of any Overland Contracting Inc. personnel, the Contractor shall implement the system. All personnel on the project shall obey the Incident Commander's every command no matter who assumes the role. Contractor personnel shall assist only as directed by the Incident Commander. The Incident Commander may ask for equipment to assist in the emergency. In this case, the Contractor shall provide any necessary equipment. Contractors will not be compensated for any downtime or lost production for any emergency situation.

At no time shall the Contractor address media concerning an on-site emergency. This shall be done only by Overland Contracting Inc. official or under the direction of Overland Contracting Inc. official or by the Client.

A list of site-specific resource and emergency contacts (Figure 7) will be developed by Overland Contracting Inc. and be provided to Contractors to supplement their own resource and emergency contacts list. Contractors are to include a comprehensive list of resource and emergency contacts as part of the Contractor Loss Control Program.

2.3 Medical Emergency Response

If an injury occurs that requires emergency assistance, the Contractor's in-house system should alert Contractor supervisors to the situation.

During normal working hours, the Contractor shall alert the site First Aid Station and the Project ESH&S Manager. If the injury occurs after hours, the Contractor shall alert the on-site Overland Contracting Inc. Supervisor. The individual should be prepared to relay the following information:

- Type of emergency.
- Severity of emergency.
- Name and telephone number of the person making the call.

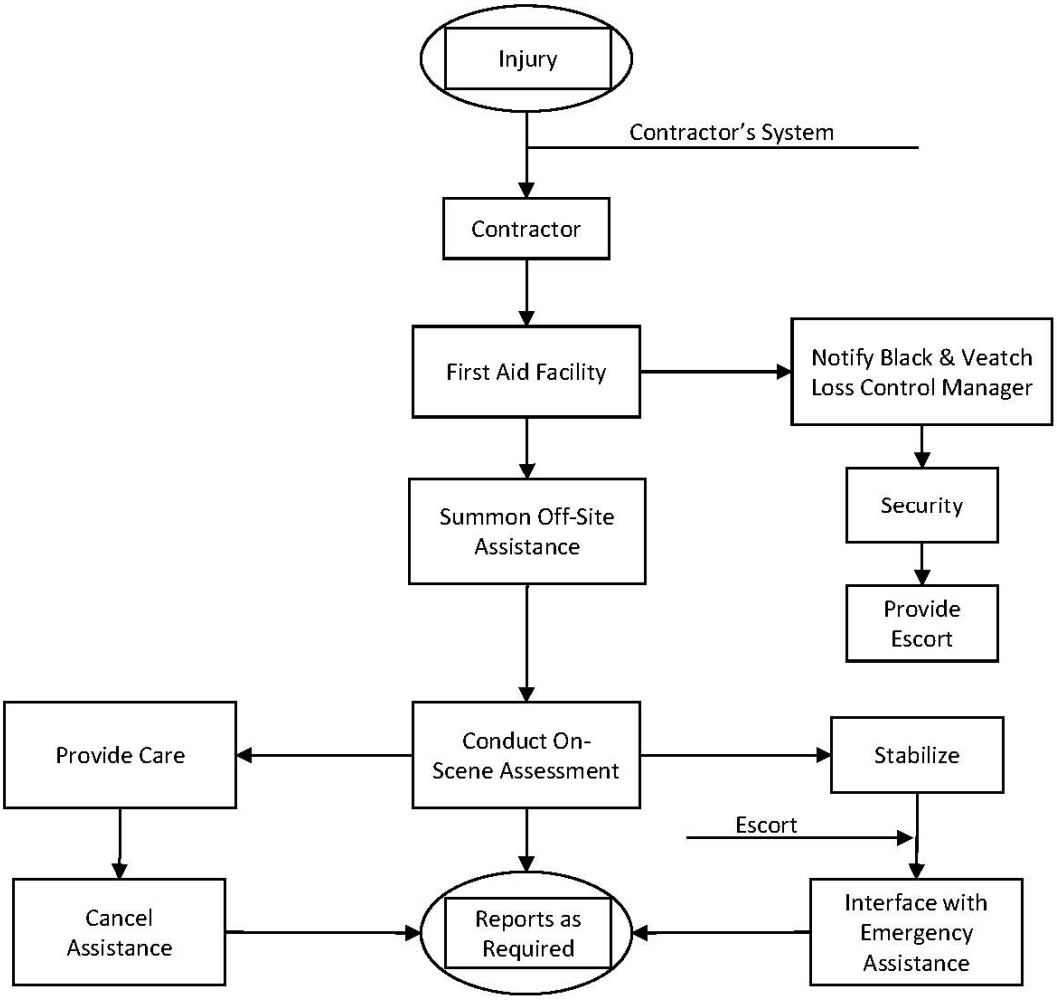
The individual shall not break communication until directed to do so.

The Contractor shall, in any emergency situation, notify the Project ESH&S Manager, regardless of time of day.

During normal working hours, depending on the magnitude of the emergency, first aid personnel may request emergency assistance. The First Aid Station shall notify the Project ESH&S Manager.

The first aid staff will respond to the incident and conduct a scene assessment. They will either treat the patient and cancel the off-site emergency assistance or they will stabilize the victim and interface with the off-site emergency personnel. Refer to the First Aid Responder List (Figure 30).

Security and other site personnel may be required to escort emergency vehicles to the emergency scene.



Medical Emergency Response Flow Chart

2.4 Fire and Hazardous Material Emergency Plan

If a fire or hazardous material spill occurs, the Contractor shall use an in-house emergency notification system to alert the Contractor's supervisors of the situation.

Minor Emergency – If it is safe to do so and if the Contractor's employees have been properly trained, they should assess the situation and extinguish the fire or clean up the spill. The Contractor should then report the incident to Overland Contracting Inc.

Major Emergency – During normal working hours, the Contractor shall alert Overland Contracting Inc. Safety personnel and inform them of the situation. If the fire or spill occurs after hours, the Contractor shall call the on-site supervisor. The individual should be prepared to relay the following information:

- Type of emergency.
- Location.
- Severity of emergency.
- Name and telephone number of the person making the call.

During normal working hours, Safety personnel will relay the information to project management and summon off-site assistance.

Overland Contracting Inc. Project Management shall assemble and determine if the emergency is of a magnitude that requires an evacuation of employees.

The construction work force shall be notified to evacuate by direct communication from Overland Contracting Inc. through the use of site radios and telephones.

The fire or hazardous material spill evacuation notice will be identified by three short air horn blasts, one second long and one second apart, followed by voice communication stating:

> "We have an emergency at (location). Please report to the assigned evacuation area."

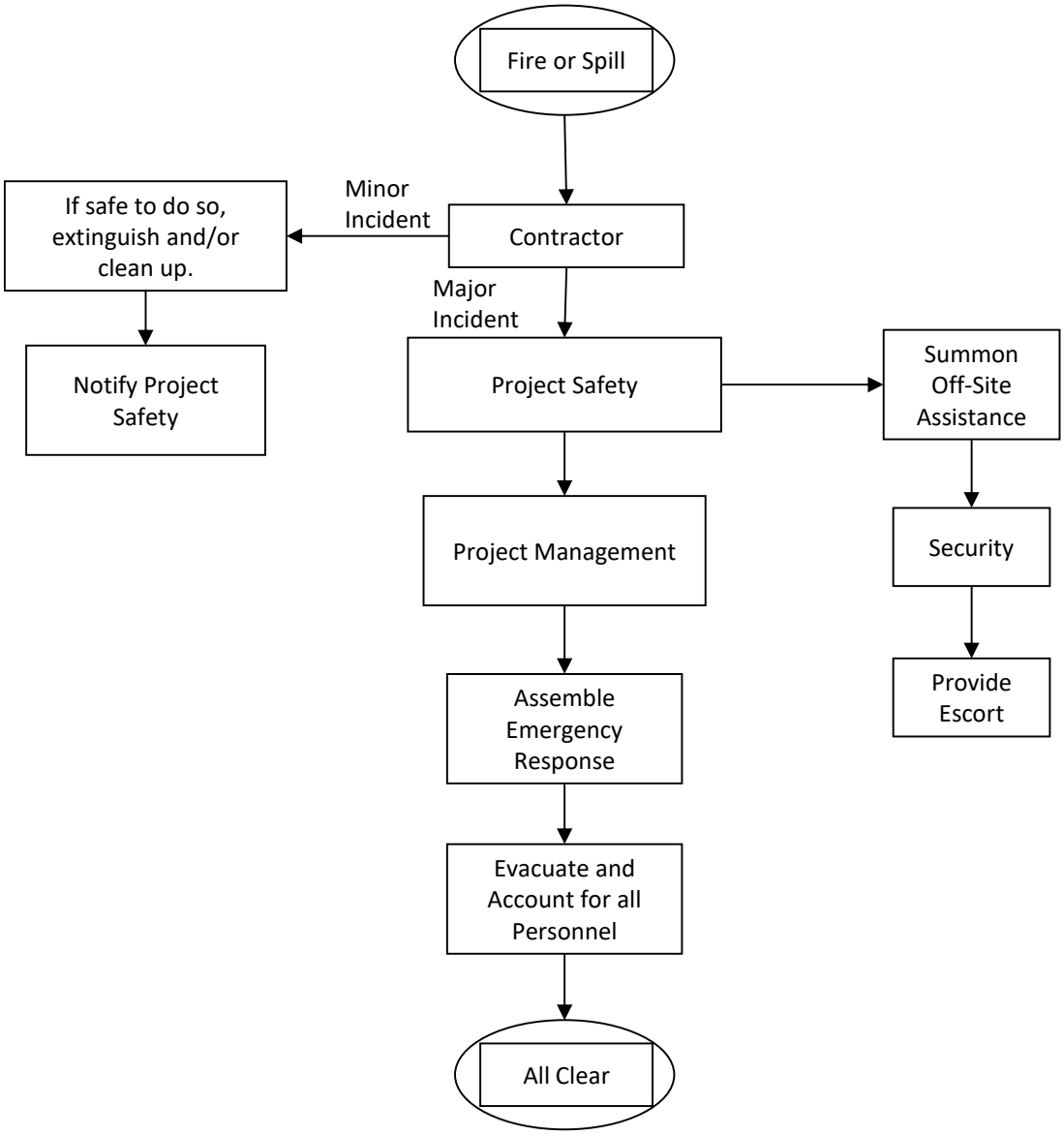
Upon hearing the announcement, all personnel shall report to the site evacuation area unless otherwise directed by Overland Contracting Inc.

Contractors shall account for their personnel and report any missing person to Overland Contracting Inc.

All personnel shall remain in these evacuation areas until released by the Field Project Manager and/or Project ESH&S Manager.

Any small chemical spill shall be cleaned up immediately if there is no hazard to those cleaning the spill. The person who cleans the spill shall notify his or her supervisor, who, in turn, will notify the Contractor safety representative. The supervisor/safety representative shall see that the material is properly disposed of. The spill shall be reported to the Project ESH&S Manager as soon as possible, but no later than 24 hours after the spill.

Any major chemical spill shall be immediately reported to the Project ESH&S Manager. The spill shall be contained as much as possible. The Incident Commander shall determine what emergency assistance is required to control or clean up the spill. The Contractor responsible for the spill shall be solely responsible for the proper cleanup and may be back charged for the associated costs. The cleanup efforts may be directed by the Overland Contracting Inc. ESH&S Manager or designee. In any spill, immediate steps shall be taken to control the spill and prevent contamination of the local environment.



Fire and Hazardous Material Emergency Plan Flow Chart

Wildfire Emergency

When work must progress in areas affected by nearby wildfires or where work will take place in an area where the potential for wildfire is possible (for example, within a "wildland urban interface" [a spot that borders an undeveloped, forested, or wild area]) projects must be prepared and develop a wildfire evacuation plan. A wildfire evacuation plan can help avoid confusion and prevent injuries. A thorough wildfire evacuation plan must include:

- Conditions under which the plan will be activated.
- Chain of command.
- Emergency functions and who will perform them.
- Specific evacuation procedures, including routes and exits.
- Procedures for accounting for personnel, customers and visitors.
- Equipment for personnel.
- Review the plan with all affected workers for awareness and understanding.

2.5 Severe Weather Procedures

Overland Contracting Inc. will monitor weather conditions for impending severe conditions by using local weather stations, the Internet, or other reliable means.

When severe weather is imminent, these procedures will be followed:

- Thunderstorm/Lightning – In the event of a thunderstorm, employees will be informed to seek shelter through the use of site radios and telephones. Upon hearing the announcement, employees shall assemble in Contractor break trailers and remain there until the all clear is sounded.
- Tornado – In the event of a tornado warning, employees shall assemble at the designated shelter. Employees will be given notice to take shelter by sets of three short air horn blasts followed by a voice announcement:

  "A tornado warning has been issued for this area. Please report to your designated shelter."

Contractors shall be responsible for their personnel and report anyone missing to Overland Contracting Inc.

All personnel shall remain in the designated shelter area until released by the Field Project Manager and/or Project ESH&S Manager.

Based on reports from local weather stations, the Internet, or some other reliable source, the local weather shall be monitored by the Project ESH&S Manager. If it is found that a tornado may hit the site, an evaluation team will be assembled by the Project ESH&S Manager. If the situation does not allow time for a team to assemble and meet, the Project ESH&S Manager shall assume control and direct actions to be taken.

The evaluation team or Project ESH&S Manager shall determine what actions are necessary to secure the site and personnel from the inclement weather. If there is enough notice of the incoming storm, the Project ESH&S Manager may have Contractor personnel called at home on off-hours to secure the site. All securing of material and site preparation for inclement weather shall be the responsibility of the Contractor and no compensation will be granted.

2.6 Bomb Threat Procedures

Upon receiving a bomb threat, the person receiving the call should fill out a Telephoned Bomb Threat Checklist (Figure 31). After completing the checklist, the person should notify the Project Field Manager who shall then assemble a project evaluation team and notify the appropriate Client personnel. The evaluation team shall review the bomb threat checklist and determine what course of action to follow:

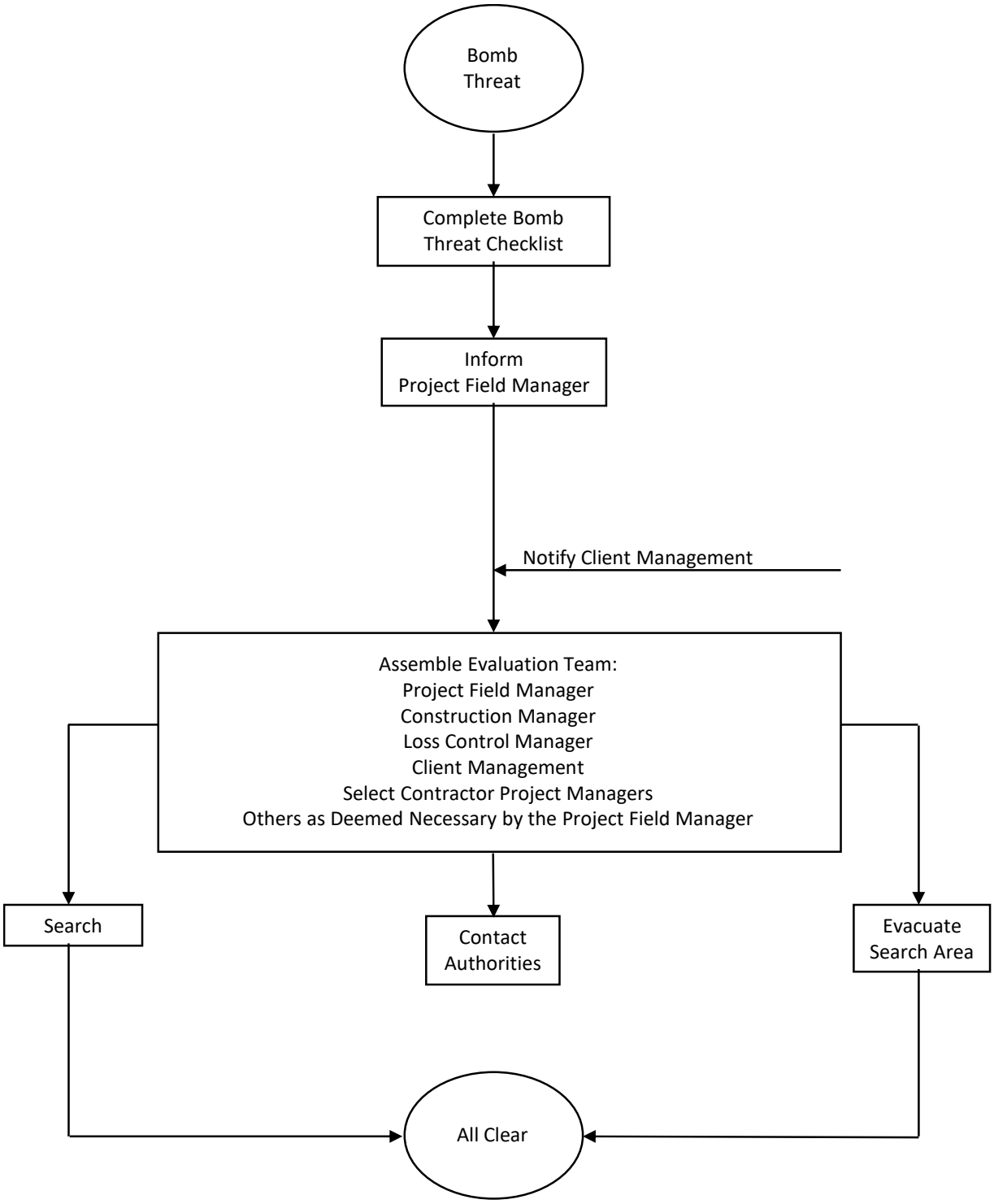
- Search the area without evacuating.
- Evacuate the area, then search.
- Notify the proper authorities.

2.7 Search

Search teams, determined by the evaluation team, will search the project area and report any findings to the evaluation team. Based on the search team's report, the evaluation team will either evacuate the project area and call the appropriate authorities or issue an "all clear."

2.8 Evacuation

If an evacuation is required, the evaluation team will establish an evacuation area. The evaluation team will inform each Contractor of the situation. It will be each Contractor's responsibility to assemble and account for all his/her employees in the established evacuation area. Unless otherwise indicated, the evacuation area will be just inside the employee walk-in gate. Any Contractor who finds that an employee is missing shall notify the Project Field Manager. The Project Field Manager shall assemble a team to search for the individual in the area that he/she was last seen, or in his/her work area. All other personnel shall remain in the evacuation area until released by the Project Field Manager. Additional evacuation areas and routes shall be identified later and the information distributed to all Contractors upon their arrival on-site. Only when the site has been searched and the evaluation team has determined the site to be clear, shall personnel be allowed back in the work area.



Bomb Threat Procedure Flow Chart

3.0 Security

3.1 Project Security Program

3.1.1 Introduction

This Project Security Program provides an administrative structure within which each Contractor present on the project site shall provide for the safety and health of employees and other individuals affected by construction activities and for the protection of property. The Project Security Program does not relieve any Contractor of any of the traditional or specific legal responsibilities with respect to the protection of property. Instead, the Project Security Program provides for coordination among the various Contractors and the surveillance to determine Contractors' conformance with the Project Security Program, initiation of corrective actions where nonconformances are identified, and administration and reporting to reveal the effectiveness of the Project Security Program.

In order to meet this end, an effective Project Security Program will be conducted at the Project site. For the protection of everyone, security officers will take immediate action against any violator.

3.1.2 Project Security Program Elements

The Project Security Program includes the following major elements:

(1) This Project Loss Control Manual that will establish security guidelines and requirements.

(2) Daily surveillance of the Contractors' activities for conformance with the minimum requirements of the Project Security Program.

(3) Procedures for advising Contractors of security violations, which include verbal, written, and personal notice of violations.

(4) Weekly project loss control meetings that all Contractors are required to attend.

3.1.3 General Scope of Services

As a service to all the Contractors at the Project site, security services may be provided. These services may include uniformed guard duty 24 hours a day. Security is staffed by qualified, uniformed personnel, with necessary qualified supervisory personnel who are competent to perform the assigned work. Such services may include, but are not limited to, the following:

- Checking that all personnel entering or leaving the project site are authorized employees or visitors of the project.
- Monitoring and recording the entry and exit of all visitors during working hours and the entry and exit of all persons during nonworking hours.
- Monitoring construction gate access to the project site.
- Making inquiries and reporting on actual or suspected damage, pilferage, or other actions detrimental to the project.

- Preventing unauthorized entry.
- Protecting on-site equipment and facilities.
- Inspecting vehicles, hand-carried containers, and similar objects as required by the Project ESH&S Manager for items not authorized to be taken from or brought onto the plant site.
- Preparing and submitting reports as required by the Project ESH&S Manager.

3.1.4 Project Security Program Administration

Overland Contracting Inc. will administer the Project Security Program and shall have such authority as is described in this manual.

3.2 Project Security Rules

3.2.1 Policy

In addition to other requirements of the Project Security Program, Overland Contracting Inc. has established mandatory security rules for the Project. All employees will receive a copy of the Project Security Regulations (Figure 32) as part of their orientation and check-in process. Contractors shall ensure that all employees are familiar with these rules and the possible penalties for violations. Security Regulations may be added to or deleted from the Project Loss Control Manual as deemed necessary by Overland Contracting Inc. Revisions or additional rules will be sent to each Contractor. Upon receipt, the Contractor shall be responsible for informing each of his/her employees of the revised or additional rules.

3.2.2 Mandatory Project Security Rules

The following Mandatory Project Security Rules are adopted for the protection of all persons involved with the construction of the Project. These rules apply to management and Contractor personnel as well as visitors while on the jobsite. These rules are general in nature and are not to be considered all-inclusive; nor do they relieve Overland Contracting Inc., Contractors, or their employees from applicable regulations promulgated by governmental authorities:

(1) Identification and Employee Access--All full-time (40 hour per week) site construction personnel will be issued a site identification badge that remains the property of Overland Contracting Inc. This identification badge shall be kept readily available by each employee and shall be used to gain access to the site. This identification badge shall be surrendered to any Overland Contracting Inc. management personnel or site security officer upon demand. Failure to comply with this regulation will result in the refusal of entry to the Project. When applying for a permanent badge, each person shall receive a general orientation which shall include receiving written safety and health regulations, security regulations, and general work rules. Each person shall be required to sign a Work Rules Receipt (Figure 33). At the same time, each applicant completes information on an envelope (Figure 34) that is retained in the Project ESH&S Manager's Office. Photographs are taken by Overland Contracting Inc. Safety personnel. The regulation receipt card is placed inside the above mentioned envelope.

Badges shall be issued according to the following:

- White Badge--Shall be issued to Overland Contracting Inc. and Client management personnel. Employees issued white badges shall be allowed 24 hour access to the site without any further authorization.
- Orange Badge--Shall be issued to Contractor supervisors. Employees issued orange badges shall have 24 hour access to the site with prior approval from the Project Field Manager and the Project ESH&S Manager.
- Yellow Badge--Shall be issued to all other full-time site personnel. Employees issued yellow badges shall only be allowed access to the site from 30 minutes before the normal starting time to 30 minutes after normal quitting time. If yellow-badged employees are required to work other than the times described above, approval must be obtained by the Overland Contracting Inc. Project ESH&S Manager by using the After Hours Access Request form (Figure 35). The After Hours Request Form must be completed and submitted by 3:00 p.m. of the day the Contractor plans to stay after normal working hours and prior to 3:00 p.m. Friday for weekend requests.
- Red Visitor Badge--Shall be issued to all visitors, vendors, and suppliers. Red badges shall be issued only for normal working hours unless prior approval has been obtained from Overland Contracting Inc. Before a visitor, vendor, or supplier is allowed access, site security shall obtain authorization from either a white- or orange-badged employee from the company the visitor, vendor, or supplier wishes to see.
- Lost or Forgotten Badges--Employees reporting to work without their badges shall be denied access until authorization from their respective employers is obtained. Authorization shall be made in person by a white- or orange-badged employee from the employer, at the respective access point. Repeatedly lost badges may result in charges to the Contractor for cost of replacement badges.
- New Employees--Before a new employee is badged, site security shall obtain authorization from a white- or orange-badged employee from the employer. Only after a potential employee has passed the required drug and alcohol testing will the employee be issued a badge.

(2) Vehicle Operation--Overland Contracting Inc. will determine the number of and need for vehicles to be on the project site and will issue on-site parking passes accordingly. Refer to the Vehicle Pass Application (Figure 36). Site personnel shall park in the designated parking area that is located outside the security gate. The owner of a vehicle parked in an unauthorized area will be notified to move it immediately. If the owner does not move the vehicle, it will be towed at the owner's expense.

Operators of vehicles must observe all traffic control devices, including speed limits, "no passing," "stop," and all other posted signs.

Failure to obey traffic control devices will result in disciplinary action to include removal of site driving privileges.

(3) Inspections--Security officers will use spot inspections of individuals' carried or worn items on a daily basis as an antitheft technique. Such inspections will include individuals' backpacks, lunch boxes, briefcases, toolboxes, and other carried or worn items capable of concealing tools or materials. Both management and labor personnel will be subject to inspection, and all inspections will be made on a random nondiscriminatory basis. Anyone who is asked to open a lunch box, briefcase, toolbox, etc., in his possession will be expected to do so. Refusal to cooperate with the inspection program will result in removal of the employee from the project site.

Vehicles entering or leaving the Project are also subject to inspection at any time by the security officers. The driver of the vehicle will also be expected to open compartments upon request. Failure to comply with vehicle inspection procedures will result in denial of future admittance to the Project and termination of employment.

Most routine inspections will occur when leaving the Project. Expanded security measures will be implemented when circumstances require their use. Expanded inspections will include a complete inspection of all personnel, carried or worn items, and vehicles prior to entry to the Project. Refusal to cooperate with the inspection program will result in the refusal of entry to the Project and termination of employment.

(4) Alcohol and Drugs--The use of narcotics and alcohol is strictly prohibited at the Project. Anyone reporting for work under the influence of narcotics, intoxicants, or nonprescribed drugs will be discharged. Anyone who transports, or allows transportation, onto the Project, any narcotic, alcoholic beverage, or nonprescribed drug will be discharged. Individuals may be inspected for narcotics prior to entering the Project.

(5) Visitors--Visitors will not be permitted in the Project without proper clearance and identification. Visitors are bound by the same security procedures as employees. Visitor identification badges are the property of Overland Contracting Inc. and will be surrendered upon leaving the Project.

(6) Security Rules--Anyone working at the Project will be subject to discharge and/or prosecution on criminal charges if he or she:

- Violates any state or federal law on the project site,
- Fights, creates a disturbance, or engages in any negligent act which could result in injury or death,
- Conspires or participates in placing a threat of any type to disrupt any work effort,
- Destroys or attempts to destroy any property,

- Intentionally engages in conduct constituting a substantial step toward the commission of any criminal offenses,
- Possesses firearms or other deadly weapons on his/her person or within a vehicle under his/her control on the project site,
- Enters without authorization into an area which is not his/her assigned work area,
- Commits any act which constitutes moral misconduct,
- Assaults or molests any Project Security Officer, supervisor, or other employee either on or off the Project site, or
- Drives any vehicle in a manner which may result in injury to anyone on the Project site.

Possible consequences for prohibited acts include a variety of options ranging from safety/security violations to arrest and criminal prosecution.

The following are specifically prohibited at the Project:

- Firearms or other deadly weapons.
- Explosives or fireworks.
- Alcoholic beverages.
- Narcotics or nonprescribed drugs.
- Pets.
- Any unauthorized vending device including soft drinks, snacks, or other foodstuffs.
- Unauthorized sale of food, tickets, beverages, or other merchandise.
- Any open fires including barrels and fire rings.
- Posting of unauthorized signs.

All site personnel are expected to comply with requests of Project security officers. Failure to do so may result in discharge.

3.3 Contractor Security Responsibilities and Program Procedures

3.3.1 Responsibilities

Contractors shall be responsible for all materials and equipment in their custody or placed in construction by them. Security methods shall be employed as required to ensure the protection of all materials, equipment, and construction work from theft, vandalism, fire, and all other damage and loss.

The Contractor shall comply with the requirements of the project's security system regarding guard service, registration of personnel and vehicles, and use of designated construction gates.

3.3.2 Program Procedures

The following program procedures are adopted for the protection of all persons involved with the construction of the Project.

3.3.2.1 Authorized Signature Card

Contractors must submit one Authorized Signature Card (Figure 37) for each person whom they want authorized to sign the following forms:

- After Hours Access Request form (Figure 35).
- Vehicle Pass Application (Figure 36).
- Equipment and Material Removal Permit (Figure 38).

Three signatures are required for comparison purposes. This card must be submitted to Overland Contracting Inc. Without prior approval, the above forms will not be accepted and the respective requests shall be denied.

3.3.2.2 After Hours Access Request

Any Contractor having personnel on-site after normal working hours must have prior approval from the Project ESH&S Manager. Such request shall be made as far in advance as feasibly possible. Failure to request such in a timely manner may be cause for access denial. Such request will be submitted by use of an After Hours Access Request form (Figure 35).

This is not a request for premium overtime payment.

3.4 Security Surveillance Policy and Procedures

3.4.1 Surveillance Policy

Contractors are responsible for the enforcement of the Project Security Program. Overland Contracting Inc. and security will provide surveillance of Contractors' activities to observe whether such activities are in compliance with the Project Security Program.

3.4.2 Violation Notification Procedures

In the event of an apparent violation of a security regulation, Overland Contracting Inc. will advise the Contractor of the violation and direct that the violation be corrected. If there is a conflict between project security rules, Contractors' security rules, and governmental regulations, the most restrictive shall apply. The Contractor shall be informed of the violation by one of the following methods.

3.4.2.1 Violation Notice

To Contractor employees who knowingly violate the project security regulations, a Violation Notice (Figure 10) will be issued. If any one employee should receive three violation notices, disciplinary action will result; this may include removal of the employee from the project site or termination.

Employees who knowingly or willfully violate project rules shall be subject to termination or removal without prior warning.

A copy of all Violation Notices issued to employees will be forwarded to their employers.

A Violation Notice may be issued to Contractor supervisors for not enforcing the Project Security Program rules with the employees under their supervision.

3.4.2.2 Project Loss Control Meetings

Overland Contracting Inc. will schedule weekly project loss control meetings. The purpose of these meetings is to discuss safety and security concerns as they relate to the Project; provide for two-way communication between the Contractor's representatives and Overland Contracting Inc.; and, in general, further the Project Safety and Security Program. All Contractors are required to have their safety representative in attendance; the safety representative shall, in turn, pass on the security information that should be discussed at the Contractor weekly toolbox meetings.

3.4.2.3 Emergency Vehicles

Overland Contracting Inc. and the Project ESH&S Manager shall be notified that emergency vehicles are in route immediately after such vehicles have been dispatched. Emergency vehicles will be met at the gate and directed to the emergency scene by a security officer. Overland Contracting Inc. has developed close working relationships with local medical care facilities and fire departments in an effort to keep them informed of site changes made since their last visit.

3.4.2.4 Law Enforcement

Overland Contracting Inc. personnel will develop close working relationships with local, state, and federal law enforcement agencies. If a criminal problem does develop, the full weight of available law enforcement resources will be brought to bear.

4.0 Safety Committee

Craft Safety and Health Representative Programs help supplement on-site inspection resources. These programs capitalize on the expertise of employees and employers who are in the workplace all day, every day, to handle problems and to provide continuous monitoring of the worksite for potential hazards. Often, under these programs, corrections are immediately made, thus producing average or lower injury and lost workday case rates, compared to overall industry rates.

The predominant crafts for each Contractor, as determined by the Project ESH&S Manager, shall have a Craft Safety and Health Representative. This representative shall be appointed by the appropriate Union Business Agent, if applicable, or shall be a volunteer, subject to approval by fellow employees. The Craft Safety and Health Representative shall not be a Union Steward (if applicable), shall rotate every 6 months, and shall be required to perform assigned work as directed by his or her Contractor. The Craft Safety and Health Representative shall be an employee at the site.

The Craft Safety and Health Representative shall suffer no loss of pay during participation in committee-related activities, and shall not be discriminated against by an employer for carrying out safety and health functions.

It is the responsibility of the Craft Safety and Health Representatives to interface with the appropriate personnel to resolve safety and health matters related to their craft and Contractor. All Craft Safety and Health Representatives will meet monthly or as deemed necessary by the Overland Contracting Inc. Project ESH&S Manager. The Overland Contracting Inc. Project ESH&S Manager shall chair the Craft Safety and Health Representative Committee meetings.

The functions of the Craft Safety and Health Representative Committee are as follows:

- Discuss and resolve safety and health matters related to the project.
- Maintain open communications between Craft Safety and Health Representatives on successful solutions to detected safety and health problems.
- Review and/or investigate accidents and occupational illness and recommend corrective actions to prevent their recurrence.
- Pre-plan safety into upcoming work operations.
- Review craft injury rates and provide assistance to crafts with injury rates above the project goal.
- Recommend changes or additions to work practices, rules, equipment, or procedures in order to reduce occupational hazards.
- Relay information obtained in the Craft Safety and Health Representative meetings to the workforce.

- Keep minutes of the Craft Safety and Health Representative meeting to be distributed to all in attendance.
- Attend and participate in site safety audits and inspections. These inspections will take place at least once a month.

Each individual associated with the construction of the Project must be prepared to accept this same dedication: to commit the time, energy, and resources to make this the safest project in the country today.

5.0 Environmental Operations Plan

Overland Contracting Inc. professionals, Contractors, and Contractors' employees present or performing work on the project site must comply with requirements contained in this and any addendums. Compliance with the Environmental Operations Plan does not relieve Contractors of any of their traditional or specific legal responsibilities with respect to environmental protection. However, it does ensure a certain level of consistency among the Contractors' individual programs and the monitoring of Contractors' conformance with the requirements.

The goal of this Environmental Operations Plan is to ensure consistent compliance with applicable regulatory and permit requirements and to minimize environmental impacts to the construction site and its surroundings during the construction project.

5.1 Plan Contents and Administration

5.1.1 Environmental Operations Plan Elements

The Environmental Operations Plan shall be project- and site-specific. The Environmental Operations Plan shall contain, at a minimum, the following sections and be organized in the following order:

1. Plan Contents and Administration.
2. Hazardous Materials.
3. Site-Specific Waste Generator Status Information.
4. Types of Waste on Site and Requirements (universal, solid, recyclable, non-hazardous/special, hazardous).
5. Chemical and Waste Storage Requirements.
6. Required Training.
7. Required Inspections.
8. Discovery of Environmental Contamination Procedures.
9. Wastewater and Storm Water Management Procedures.
10. Spill Prevention Control and Countermeasures Plan Requirements.
11. Air Permitting Requirements.
12. Noncompliance Procedures.
13. Community Relations Procedures.
14. Emergency Contact Information.

5.1.2 Environmental Operations Plan Administration

Overland Contracting Inc. will administer the Environmental Operations Plan and will have such authority as described herein.

5.1.3 Contractor's Responsibilities

The Environmental Operations Plan is designed to require consistent and effective environmental protection activities during construction, startup, and commissioning. The Environmental Operations Plan does not relieve a Contractor of its other contract obligations or of its duties to comply with all applicable governmental regulations, including permits applied for and obtained for this project.

Contractors will be responsible for the performances of their own employees, as well as those of their Contractors. This requirement will apply continuously during the entire contract period and will not be limited to normal working hours.

Contractor is responsible for the development and implementation of a written Loss Control Program that includes an environmental operations plan that meets or exceeds the requirements of this Environmental Operations Plan and all applicable federal, state, or local regulatory requirements. Contractors' conformance with the requirements to initiate and maintain such a program is mandatory under the provisions of the governing contract.

The Contractor's environmental operations program must comply with federal, state, and local regulations. Overland Contracting Inc. does not make the claim that the Environmental Operations Plan represents all federal environmental requirements. The Contractor is required to include in its environmental control plan the federal requirements that pertain to its work and activities. The Contractor is also required to include state and local environmental requirements, which are typically more stringent and broader in scope.

Contractors will designate a Contractor representative to be responsible for the administration of the Contractor environmental operations programs, the Environmental Operations Plan, and Client environmental requirements found in the applicable permits and approvals. Contractors also will be responsible for the administration of the Contractor environmental operations programs and the Environmental Operations Plan for its Contractors, at any tier.

5.1.4 Program Requirements

The Contractor environmental operations plan will meet the minimum applicable requirements of all current federal, state, and local agencies that have authority over environmental aspects of construction and those of the project. In addition, the Contractor must do the following:

- Deliver one copy of the Contractor environmental operations plan to Overland Contracting Inc. for review and comments.
- Initiate and maintain procedures that are necessary to comply with environmental regulations and requirements.
- Participate in weekly construction coordination meetings.

- Cooperate with Overland Contracting Inc. and federal, state, and local agencies concerning environmental issues.
- Participate in the implementation of environmental control measures as may be appropriate for the protection of the environment.
- Submit a written orientation program to include, but not be limited to, the environmental impacts of construction, emergency communication procedures, environmental incident response and mitigation, disciplinary procedures, Environmental Operations Plan requirements, and Client environmental requirements.
- Be responsible for the attendance of all new employees at orientation meetings.
- Maintain suitable equipment and procedures for the prevention and control of spills and releases.
- Provide a system that ensures their employees comply with the Environmental Operations Plan of the project Loss Control Manual and List of Site Specific Environmental Requirements for Construction Operations.
- Conduct and document training for the Contractor's and the Contractor's employees in the recognition of environmental hazards, prevention of environmental degradation, recognition of environmental incidents, response to and mitigation of environmental incidents, and reporting of environmental activities and incidents. Records of such training will be maintained on-site by the Contractor and copies provided to Overland Contracting Inc.
- Maintain accurate environmental compliance records and statistics and submit the Loss Management Monthly Summary (Figure 2) to Overland Contracting Inc. by the first of each month. Included in the summary will be deficiencies detected and corrective action taken.
- Provide a system for ensuring that reports required by the Environmental Operations Plan are submitted to Overland Contracting Inc. in a timely manner.
- Provide a system for immediately reporting all environmental incidents to the nearest supervisor and to Overland Contracting Inc.
- Address environmental issues as part of the weekly safety meeting required by the Project Safety and Health Program. In accordance with that program, a copy of the Weekly Safety Meeting Report (Figure 4) must be submitted to Overland Contracting Inc. This form should be used to report on the environmental subjects discussed. Weekly Safety Meeting Report forms can be obtained from Overland Contracting Inc.
- Designate a qualified representative to be responsible for managing, shipping, and disposing of regulated wastes.
- Establish a system that documents frequent and regular inspections of environmental control systems within their area of responsibility by a qualified person.

- Provide frequent and regular inspections of the jobsite, materials, and equipment by competent or qualified persons.
- Provide written disciplinary procedures equal to or greater than those described in this Environmental Operations Plan. The procedures must include enforcement responsibilities of all supervisory personnel.
- Conduct daily work area environmental inspections, complete the Work Area Daily Inspection Checklist (Figure 8), and submit them weekly to Overland Contracting Inc.

5.1.5 Environmental Surveillance Policy and Procedures

Overland Contracting Inc. will provide surveillance of Contractors' activities to determine whether such activities are in compliance with the Environmental Operations Plan. If an apparent violation of an environmental requirement occurs, Overland Contracting Inc. will advise the Contractor of the violation and require that the violation be corrected. If there is a conflict among project environmental requirements, Contractor environmental operations program, Client safety rules, and government regulations, the most restrictive requirement will apply. Contractors will be informed of the violation by one of the following methods.

5.1.5.1 Environmental Violation Notice

The Contractor will be informed of identified violations of environmental requirements and permit conditions by means of the Violation Notice (Figure 10). Violation notices will be delivered by the most expeditious method to the Contractor's on-site construction office. The Contractor will receive an original and one copy of each violation notice.

The Contractor will take corrective action within the abatement period shown on the violation notice or will propose an alternate solution within the abatement period. If corrective action is not taken within the abatement period, work will stop in the affected area until the cited violation is corrected.

After corrective action has been completed, the Contractor will state, in writing, the corrective action taken, date and sign the original notice, and return it to Overland Contracting Inc.

The following are four types of violations:

- Serious--Any condition or practice that is causing or likely to cause significant environmental damage or threat to human health.
- Nonserious--Any condition or practice that is not likely to cause significant environmental damage or threat to human health.
- Stop Work/Imminent Danger--Any condition or practice that would reasonably be expected to cause a significant environmental incident before such condition or practice can be corrected. This is a "stop work" situation. All persons will be withdrawn from the affected area, and no one will be allowed back in, except those individuals that are needed to correct the condition or practice.

- Stop Work/Noncompliance--Any violation (serious or nonserious) described in a notice, but not totally corrected within the noted abatement time. The abatement time shall not be extended. This is a "stop work" situation. All persons will be withdrawn from the affected area, and no one will be allowed back in, except those individuals that are needed to correct the condition or practice.

If Overland Contracting Inc. considers a violation to be imminently dangerous to the environment or to human health, the Contractor's representative will be directed to cease work immediately in that area. The imminent danger condition will be corrected to the satisfaction of Overland Contracting Inc.; Client; and federal, state, and local requirements before work is allowed to continue.

5.1.5.2 Repeated Violations

In addition to the above notifications, or Overland Contracting Inc. will notify the Contractor's corporate office if a particular violation is repeated or if the Contractor's field supervision is not cooperative. Such notification to the Contractor's corporate office may be either by telephone or in writing; however, each telephone notification will be followed up with a written notification.

Repeated nonconformance with the Environmental Operations Plan or Contractor environmental operations plan and repeated failure to comply with correction directives may result in removal of the Contractor's management from the project site or termination of the contract.

5.1.6 Environmental Operations Plan Operations

Overland Contracting Inc. will distribute to all Contractors copies of the Environmental Operations Plan as part of the Project Site Safety Plan. Contractors will ensure that all their employees and Contractors are familiar with, and abide by, the contents of this plan, including any changes distributed by Overland Contracting Inc.

5.1.6.1 Project Construction Coordination Meetings

Overland Contracting Inc. will schedule project construction coordination meetings weekly and at any other time that is deemed necessary. The meetings will include a discussion of environmental aspects of the project; encouragement of communication among the Contractor's safety representative, Overland Contracting Inc., and Client; and the promotion of activities required by the Environmental Operations Plan. All Contractors are required to have their Contractor Environmental Representative and Contractor Operations Management in attendance.

5.1.6.2 Environmental Incident Reporting

The Contractor's representative will immediately report to Overland Contracting Inc. any environmental incident. Overland Contracting Inc., in turn, will report to Client. The Contractor's representative will complete an Environmental Incident Report form (Figure 39) and submit the completed report to Overland Contracting Inc. within 24 hours after the incident, along with any supporting information such as photographs and witness statements. Reports will be dated and signed by the Contractor's Environmental Representative. Overland Contracting Inc. will, in turn, submit the report to Client within 48 hours.

If a serious incident involving notification of regulatory agencies occurs, Overland Contracting Inc. will be notified immediately, regardless of the day or hour. This reporting requirement is in addition to the requirements outlined in the above paragraph.

5.1.6.3 Regulatory Agency Inspection Procedures

Overland Contracting Inc. Project Management will be notified immediately when an agency environmental compliance officer is on-site. A representative from Overland Contracting Inc. may accompany the agency environmental compliance officer during inspections of the construction site.

Overland Contracting Inc. will examine the agency compliance officer's credentials prior to the start of any on-site inspection. At all times while on-site, the compliance officer will be treated courteously and given full cooperation. The compliance officer shall be accompanied by a Contractor representative at all times.

Contractor agrees that, in the event of any violation of environmental regulations or laws arising from Contractor's or Contractor's employees' action or failure to act, Contractor will take immediate action to resolve the violation with the appropriate regulatory authority; pay any and all fines, penalties, or other costs that are levied by a regulatory authority; and reimburse to Overland Contracting Inc. and the Client Agency all directly related and documented costs expended to resolve the violation.

5.2 Hazardous Materials, Fuel, and Oil Management

5.2.1 Hazardous Materials Management

For the purpose of this section, hazardous materials are defined as follows:

- A material that exhibits a hazardous characteristic (flammable, combustible, toxic, corrosive, poison, explosive, etc., or contains a hazardous substance above a reportable quantity).
- Used oil.
- Hazardous wastes.
- Universal wastes.

5.2.1.1 Receiving Hazardous Materials

Workers receiving hazardous materials will verify that the Material Safety Data Sheet (MSDS) is on file before storage or use will be permitted.

5.2.1.2 Containers

Containers are defined as barrels, bottles, cans, cylinders, drums, reaction vessels, or storage tanks, but do not include piping. Bulk storage containers include tanks, drums, and mobile or portable totes.

Containers of hazardous materials must be closed during storage, except when it is necessary to add or remove contents.

Containers of hazardous materials must be marked or labeled with the material owner's company name, an appropriate hazard warning statement, and a chemical identity that refers to the Chemical Inventory and MSDS file maintained in accordance with the OSHA Hazardous Communications Standard (29 CFR 1910.1200). Containers in storage must be positioned so that the label is visible upon approach.

Containers that are not defined as hazardous shall use the wording "non-hazardous" as an appropriate warning statement.

Containers of hazardous materials must be placed on foundations or bases capable of providing support without ill effects from settlement, compression, or uplift.

Containers that are deteriorating (e.g., cracked, rusted) or leaking must not be used. Hazardous materials stored in defective containers must be transferred to suitable containers in good condition.

Hazardous materials must be managed to prevent fires, explosions, gaseous emissions, leaching, or other discharge of hazardous waste or hazardous waste constituents that could result from the mixing of incompatible wastes or materials if containers break or leak.

Incompatible materials must not be placed in the same container.

Hazardous materials must not be placed in an unwashed container that previously held an incompatible waste or material.

A storage container holding a hazardous material that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials or protected from them by means of a dike, berm, wall, or other device.

The hazardous material storage area must be separated and protected from sources of ignition or reaction, including but not limited to, the following:

- Open flames.
- Smoking.
- Cutting and welding.
- Hot surfaces.
- Frictional heat.
- Sparks (static, electrical, or mechanical).
- Spontaneous ignition (e.g., from heat-producing chemical reactions).
- Radiant heat.

While ignitable or reactive materials are being handled, the Contractor must confine smoking and open flames to specially designated locations. "No Smoking" signs must be conspicuously placed wherever there is a hazard from ignitable or reactive waste.

5.2.1.3 Spill Response for Container Leaks

For container systems that are leaking, the following steps are required:

- The flow of material from the container or into the secondary containment system must be immediately stopped and the system inspected to determine the cause of the release.
- Leaked material shall be removed from containment systems or the secondary containment system within 24 hours.
- Visible releases to the environment shall be contained, removed, and disposed of immediately after assessment and determination of the method of cleanup.
- Where hazardous materials are stored in portable containers or used, spill response supplies must be readily available for immediate use. The spill response kit shall be of a size capable of collecting and containing 110 percent of the largest container. Mobile vehicles will have a spill kit with at least a 4 gallon capacity with it at all times. Fueling vehicles are required to carry a spill kit with a 10 gallon capacity. Personnel using hazardous materials must be trained in the proper use of the spill response kit.

5.2.1.4 Secondary Containment

Containers of liquid or flowable hazardous materials in containers equal to or exceeding 30 gallons in capacity must be provided with secondary containment. Deviations from this requirement require Overland Contracting Inc.'s approval.

Secondary containment must be designed, installed, and operated to prevent release and migration of materials or accumulated liquids out of the system to the soil, groundwater, or surface waters at any time during use or storage.

Secondary containment for tanks must include the following:

- Capacity sufficient to contain 110 percent of the capacity of the largest container within the secondary containment area with sufficient freeboard for precipitation.
- External liner or material that is impervious and free from cracks and gaps. It must cover all surrounding earth likely to come into contact with material released from the tank.
- Double-walled tanks that must be designed as an integral structure, so that any release from the inner tank is contained by the outer shell. The tanks must be protected against corrosion.

- Inspections for tank systems, which must occur at least once each operating day. The tank system inspection will include overfill/spill control equipment, aboveground portions of the tank system, and the area surrounding the tank system.
- Daily inspections, which are to be documented on the Work Area Daily Inspection Checklist (Figure 8) or equivalent.

5.2.1.5 Storage

Overland Contracting Inc. will determine the location of appropriate storage areas for hazardous materials. These areas will be identified on the construction facilities drawing, as determined during initial site activities and posted in the construction office.

Areas used to store containers of hazardous materials must comply with the following criteria unless otherwise approved in writing by Overland Contracting Inc.:

- Posted with the type of materials and hazard present.
- Protected against entry of rain and snow (compressed gas cylinders excluded).
- Protected from the sun (compressed gas cylinders excluded).
- Protected with secondary containment (compressed gas cylinders excluded).
- Located away from surface water or drainage systems.
- Located outside the 100 year flood plain.
- Located at least 50 feet from the facility property line or nearest building or storage structure or within a flammable storage cabinet.

Containers of incompatible hazardous materials must be stored in a manner where they are separated or protected from each other by means of a dike, berm, wall, or other device.

Aisle space must allow for unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the site in the event of an emergency.

5.2.1.6 Inspection

The Contractor's representative will inspect all hazardous material storage areas daily for leaks, container integrity, storage practices, spill prevention/control equipment and supplies, and fire extinguishers. Inspections must be documented in writing and include the date and time of inspection. The daily inspections will be documented on the Work Area Daily Inspection Checklist (Figure 8) or equivalent.

5.2.1.7 Inventory

The Contractor's representative will provide to Overland Contracting Inc. a hazardous material inventory of all hazardous material on-site by the fifth of each month. The inventory will list the chemical name shown on the label and MSDS, the location of storage, and the amount stored.

5.2.2 Fueling

Contractor will use drip pans, absorbent pads, or equivalent measures during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface. Absorbent spill cleanup materials and spill kits shall be available in fueling areas and on fueling trucks and shall be disposed of properly after use.

Vehicles being fueled are required to carry a spill kit capable of addressing a spill of at least 10 gallons of fuel or oil. Fueling trucks are required to carry a spill kit capable of addressing a spill of at least 10 gallons of fuel or oil. When fueling is done on-site, an 80 gallon salvage drum and absorbent compatible with fuels shall be readily available.

Contractor will not fuel vehicles within 50 feet of storm drains, open ditches, water bodies, or wetlands. Nozzles used in vehicle and equipment fueling must be equipped with an automatic shutoff to control drips and releases.

5.2.3 Mobile Equipment with Hydraulic Reservoir

Whenever the Contractor uses mobile equipment with fuel or hydraulic reservoirs, storm drains, open ditches, water bodies, or wetlands within 50 feet will be protected against a release of fuel or hydraulic fluid from the equipment.

Mobile equipment with hydraulic reservoirs is required to carry a spill kit capable of addressing a spill of at least 4 gallons of hydraulic oils. When fueling is done on-site, an 80 gallon salvage drum and absorbent compatible with hydraulic oils shall be readily available.

5.3 Waste Management

5.3.1 Hazardous Waste

If the site already has an EPA ID number and generator status established, the Contractors will ensure all activities are in compliance with the Site Hazardous Waste Management Plan. The Contractors will manage hazardous waste to ensure no change in generator status occurs. If this is unavoidable, proper notification to Overland Contracting Inc. must occur prior to generation or within 24 hours of unexpected generation events. Overland Contracting Inc. will coordinate with the Contractor and Client to ensure the state environmental agency or the EPA is notified of on-site regulated waste activities and requirements are met to maintain compliance with all applicable laws and regulations.

If the site does not already have an EPA ID, the amount of hazardous waste generated at the site in a calendar month will determine the generator status of the Contractors and the site collectively. The Contractors will work toward a goal of minimizing the generation of hazardous waste with the objective that the site remain below the requirements for a Very Small Quantity Generator (VSQG):

- Generate less than 220 pounds of hazardous waste or 2 pounds of acute hazardous waste in a calendar month.
- Accumulate less than 2,200 pounds of hazardous waste at any one time.

The Contractor must manage all wastes on-site that are generated by the project activities as part of its contractual agreements. Waste may not be taken off-site or disposed of without BV coordination and approval in accordance with contractual agreements and regulatory requirements as outlined below for each generator status. Black & Veatch will provide the EPA ID number to Contractors and work with Contractors to maintain compliance with the following generator requirements.

VSQGs generate 100 kilograms (220 lb) or less per month of hazardous waste or 1 kilogram (2.2 lb) or less per month of acutely hazardous waste.	Requirements for VSQGs include the following: • VSQGs must identify all the hazardous waste generated. • VSQGs may not accumulate more than 1,000 kilograms of hazardous waste at any time.
Small Quantity Generators (SQGs) generate more than 100 kilograms (220 lb) but less than 1,000 kilograms (2,204 lb) of hazardous waste per month.	Major requirements for SQGs include the following: • SQGs may accumulate hazardous waste on-site for 180 days without a permit (or 270 days if shipping a distance greater than 200 miles). • The quantity of hazardous on-site waste must never exceed 6,000 kilograms (13,227 lb).
Large Quantity Generators (LQGs) generate 1,000 kilograms (2,204 lb) per month or more of hazardous waste or more than 1 kilogram (2.2 lb) per month of acutely hazardous waste.	Major requirements for LQGs include the following: • LQGs may only accumulate waste on-site for 90 days. Certain exceptions apply. • LQGs do not have a limit on the amount of hazardous waste accumulated on-site.
Additional requirements may be required if work is conducted in state run programs.	

If this site is a known contaminated site, contamination is discovered, or environmental sampling/testing will be done to determine if contamination exists on site, the Overland Contracting Inc. ESH&S Manager shall be consulted to determine whether Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements apply.

5.4 Solid Waste

Solid waste, such as garbage, refuse, and sludge and solid, liquid, semi-solid, or contained gaseous materials must be contained. The solid waste must be stored in a manner that does not constitute a fire, health, or safety hazard and must be contained or bundled so as not to result in a spill. Bulk or noncontainerized nonhazardous liquid wastes are prohibited from disposal at a solid waste landfill.

The solid waste must be collected with sufficient frequency to inhibit the propagation or attraction of vectors such as animals or insects or the creation of a nuisance. Food waste must be collected at least weekly.

5.5 Universal

5.5.1 Fluorescent Bulbs

Fluorescent bulbs must be managed under the Universal Waste Rule. Bulbs being purchased for the site should be non-mercury containing if possible. Check to ensure that bulb ends are green and marked as low/non-mercury.

If bulbs are removed and are non-mercury containing, they can be disposed of in solid waste.

If bulbs contain mercury or are unknown, they must be managed in accordance with the Universal Waste Rule. The accumulation container must be labeled with a "Universal Waste" label and accumulation start date. Once full or within 1 year from start of accumulation, the Universal Waste Storage Box must be shipped for proper disposal through an approved waste disposal company.

5.5.2 Batteries

The Contractor must collect and recycle for proper disposal used nickel-cadmium (Ni-Cd) batteries, used small sealed lead acid (SSLA) batteries, and certain other regulated batteries used on-site.

Alkaline batteries manufactured after 1992 can be disposed of in the municipal trash in ones or twos. Alkaline batteries manufactured prior to 1992 contain mercury and other toxic materials requiring handling under either the Universal Waste Rule or as a hazardous waste, depending on state requirements.

Unsealed lead acid batteries shall be recycled and managed as a Resource Conservation and Recovery Act (RCRA) hazardous waste. Unsealed lead acid batteries do not have to be bundled as hazardous waste provided they are recycled properly through an approved recycler.

5.5.3 Toner

Toner should be returned to the supplier or office supply store for recycling.

5.5.4 Pesticides

Contractors applying an EPA restricted use pesticide on the construction site must use certified pesticide applicators.

Contractors applying a restricted use pesticide on the construction site must present to Overland Contracting Inc. a copy of the applicator's pesticide applicator certification or license before application of the pesticide.

Pesticides stored on-site must be managed in accordance with label directions and the following requirements:

- The pesticide storage areas shall be in a dry, well ventilated, secured room or building, with spill containment and runoff retention systems.

- Identification and warning signs are required on the room or building and on movable equipment used to handle the pesticides (e.g., sprayers).
- The pesticide containers must have visible labels, be segregated according to formulation, and be inspected regularly for corrosion and leaks.

5.5.5 Off-Site Shipments of Universal Waste

Self-transportation of universal waste must be done in compliance with 40 CFR 273, Subpart D, Transporters of Universal Waste.

If shipping using a transporter, universal waste must be packaged, labeled, marked, and placarded. The shipping papers must be prepared in accordance with 49 CFR Parts 172 to 180. The proper shipping information must be confirmed with the Waste Disposal Representative prior to shipment.

5.5.6 Storage

Universal wastes should be boxed or in containment away from active areas in a designated area.

5.5.7 Labeling

All universal waste should have a Universal Waste label affixed similar to the following. All the information must be filled out on the label. Universal waste shall be shipped or taken off-site for proper disposal in less than 1 year from the Accumulation Start Date. The Accumulation Start Date should be the date the first item is placed in the container.

5.6 Solid Waste

Solid waste can be placed in the solid waste dumpster on-site. This includes general paper trash, plastic containers from oil after they have been completely emptied and drained, and non-contaminated/nonhazardous materials.

5.7 Recyclable Materials

- Recyclable materials should be recycled if possible. This includes, but is not limited to, the following:
  - Aerosol cans **after puncture** – Dispose in metal recycling rolloff.
    - Aerosol cans (NOT PROPANE CYLINDERS or other non-compatible materials) should be punctured to drain any residual propellant or paint using an aerosol puncturing system attached to a drum with charcoal filter. Empty cans can still contain propellant and must be punctured prior to recycling. A faceshield should be worn during puncturing.
  - Used oil.
  - Metal.
  - Pallets.
  - Plastic.
  - Other.

5.8 Nonhazardous Waste/Special Waste

Nonhazardous waste or special waste must be separated from hazardous waste.

This can include, but is not limited to, the following:

- Used oil.
- Contaminated soil that does not carry any hazardous characteristics (testing done or generator knowledge).
- Oily rags.
- Oily debris.
- Nonhazardous paint.
- Concrete washout.
- Other materials not allowed in the general solid waste.

Used oil includes oil that is not contaminated by PCBs or other chemicals. Used oil is recyclable and should be managed as indicated in Section 5.7. Do NOT label used oil as "Waste Oil." Used oil must be labeled as "Used Oil" with the following label (or similar).

Nonhazardous paints can include paint drained from punctured cans (using the proper puncturing device described in Section 5.7) or unusable nonhazardous paints.

The following label (or similar) should be used to identify all nonhazardous wastes (other than used oil):

5.9 Hazardous Waste

Hazardous waste can include the following:

1. **The F-list** (non-specific source wastes). This list identifies wastes from common manufacturing and industrial processes, such as solvents that have been used in cleaning or degreasing operations. Because the processes producing these wastes can occur in different sectors of industry, the F-listed wastes are known as wastes from nonspecific sources. Wastes included on the F-list can be found in the regulations at 40 CFR §261.31.

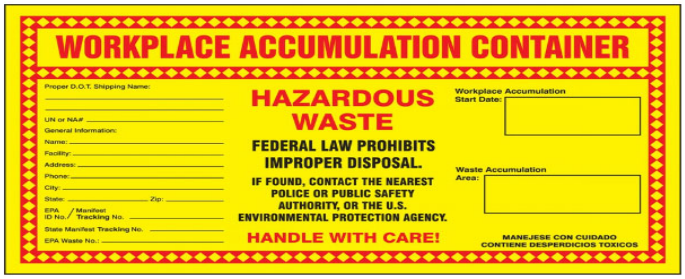
2. **The K-list** (source-specific wastes). This list includes certain wastes from specific industries, such as petroleum refining or pesticide manufacturing. Certain sludges and wastewaters from treatment and production processes in these industries are examples of source-specific wastes. Wastes included on the K-list can be found in the regulations at 40 CFR §261.32.

3. **The P-list and the U-list** (discarded commercial chemical products). These lists include specific commercial chemical products in an unused form. Some pesticides and some pharmaceutical products become hazardous waste when discarded. Wastes included on the P- and U-lists can be found in the regulations at 40 CFR §261.33.

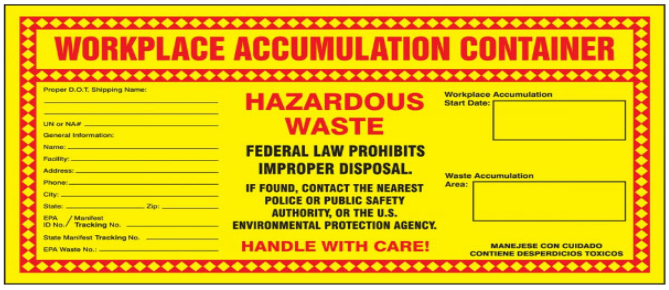
5.9.1 Labeling

5.9.1.1 Satellite Areas

If using satellite areas, wastes must have the following label (or similar) completely filled out and placed on the container. The date that the first waste is deposited in the container in the satellite area must be entered on the label as shown below:



Only one container (up to 55 gallons) of one type of waste is permitted in the satellite area at a time. Once full or up to 1 year from the date above, it must be moved to the hazardous waste accumulation area. The date that the container is moved to the hazardous waste accumulation area must be entered on the label (or similar) as shown below:



5.9.1.2 No Satellite Areas

If satellite areas are not being used, wastes are stored directly in the hazardous waste accumulation area. Wastes must have the following label (or similar) completely filled out and placed on the container. The date that waste was first deposited into the container must be entered on the accumulation start date. The waste must be shipped off-site within 90/180 days (depending on generator status).

All hazardous waste labels must be completely filled out and have the statement “HAZARDOUS WASTE FEDERAL LAW PROHIBITS IMPROPER DISPOSAL. IF FOUND, CONTACT THE NEAREST POLICE, PUBLIC SAFETY AUTHORITY OR THE US ENVIRONMENTAL PROTECTION AGENCY” and accumulation start dates.

5.9.1.3 Under Characterization

If a material has been tested, but it is unknown if it will be classified as hazardous or nonhazardous, it should be labeled with the following label (or similar), until final determination is made, and proper label is affixed:

5.9.2 Signage

5.9.2.1 Satellite Areas

Must be labeled with (or similar):

Must have appropriate labeling to the hazard.

For example, if flammable:

If corrosive:

The satellite area must be covered and protected from damage. The hazardous waste must have spill containment capable of containing 110 percent of the largest container. If containing flammable materials, the cabinet/materials must be grounded, and any containers must be bonded while filling. Noncompatible materials must be separated.

5.9.2.2 Hazardous Waste Accumulation Area

Must be labeled with (or similar):

Must have appropriate labeling to the hazard.

For example, if flammable:

If corrosive:

An inventory log with date, description of waste, and number pounds of material must be posted in the hazardous waste accumulation area. If containers are being filled in the hazardous waste accumulation area, the log must indicate the volume each month to ensure proof of generation status.

If a conex or enclosed room is used, it must have ventilation with explosionproof fan, temperature control, and explosionproof lighting. The waste area must prevent unauthorized access.

5.9.3 Contact Information

Contact information for all entities responsible for hazardous waste on-site must be posted at all satellite areas and the hazardous accumulation area with mobile emergency numbers.

5.10 Storage Requirements

All hazardous materials must be the following:

- Closed during storage, except when it is necessary to add or remove contents.
- Not be placed in an unwashed container that previously held an incompatible waste or material.
- Protected against entry of rain and snow (compressed gas cylinders excluded).
- Protected from the sun (compressed gas cylinders excluded).
- Protected with secondary containment (compressed gas cylinders excluded).
- Located away from surface water or drainage systems.
- Located outside the 100 year flood plain.

- Located at least 50 feet from the facility property line or nearest building or storage structure or within a flammable storage cabinet.
- Stored at least 4 inches off the ground. Liquids should be stored on containment pallets.

A 3 foot aisle should be between all pallets for access, and a 12 foot access in front of the storage areas should be clear for emergency vehicle access.

Labels should be turned outward, visible, and in good condition.

A storage container holding a hazardous material that is incompatible with any waste or other materials (corrosives, flammables, acids, etc.) stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials or protected from them by means of a dike, berm, wall, or other device.

Nonhazardous waste should be separated from hazardous waste and stored in separate storage locations with appropriate signage.

Used oil should be separated from new oil.

5.10.1 Secondary Containment

The following requirements for hazardous material secondary containment shall be incorporated into the Contractor's site-specific EOP, as a minimum:

- Containers of liquid or flowable hazardous materials in containers equal to or exceeding 25 gallons in capacity must be provided with secondary containment or be of double walled construction.
- Secondary containment must be designed, installed, and operated to prevent release and migration of materials or accumulated liquids out of the system to the soil, groundwater, or surface waters at any time during use or storage.
- Secondary containment for tanks must include the following:
  - Capacity sufficient to contain 110 percent of the capacity of the largest container within the secondary containment area with sufficient freeboard for precipitation.
  - External liner or material that is impervious and free from cracks and gaps. It must cover all surrounding earth likely to come into contact with material released from the tank.
  - Double-walled tanks that must be designed as an integral structure, so that any release from the inner tank is contained by the outer shell. The tanks must be protected against corrosion.
  - Daily visual inspections to include overfill/spill control equipment, aboveground portions of the tank system, and the area surrounding the tank system.

5.11 Waste Piles

Waste piles must be managed so that wind and water dispersal is controlled. Waste piles will be located on a flat dry area. It will be located with due consideration to security and public access.

The waste pile will be on an impervious surface such as a layer of 30 mil plastic sheeting or equivalent material that is approved by BV. The edges of the waste pile will be contained by a sediments barrier such as silt fence or hay bales. The impervious surface will extend at least 3 feet from the outside edge of the sediment barrier. Joints of the impervious materials will overlap at least 12 inches.

A run-on control system must be capable of preventing flow onto the waste pile during peak discharge from at least a 25 year storm. The run-off management system must be capable of collecting and controlling the water volume resulting from a 25 year, 24 hour rainfall event.

The waste pile will not exceed 15 feet in height and will not be sloped steeper than one vertical to two horizontal. The waste pile will be covered with impervious materials, such as a tarpaulin or plastic sheeting, at the end of each day and during adverse weather conditions. The cover will have a 12 inch overlap at all joints and will be secured in place to prevent displacement during adverse weather conditions and wind action. The cover will be large enough to extend beyond the limits of the bottom layer and will be secured in place with tie-downs or ballasts.

No liquid or materials containing free liquids may be placed in the waste pile.

Drainage from the waste pile will be controlled in a manner so that run-on or runoff from the waste pile is minimized and mitigated. All wastes from the sediment barrier system will be managed in accordance with the Environmental Operations Plan.

Temporary soils piles resulting from excavation or earth moving activities are not required to have an impervious surface.

Temporary soils piles resulting from excavation or earth moving activities are not required to have a run-on control system or cover, unless the soil pile is older than 48 hours.

Construction and demolition material covered or coated with metal bearing coatings (arsenic, lead, chrome, cadmium, mercury, selenium, or silver) must be contained or stockpiled to prevent dust, coating flakes, or slag or residue from the waste pile so that soils are not contaminated. To determine if they are hazardous, a berm or similar containment system must be built to prevent run-on or run-off of rain or other water sources. If the material exhibits characteristics of toxicity, as determined by the Toxicity Characteristic Leaching Procedure (TCLP), Test Method 1311 in "Testing Methods for Evaluating Solid Waste, Physical/Chemicals Methods," EPA Publications SW-846, the soils must be managed as a hazardous waste unless recycled.

5.12 Inspections

Weekly environmental inspections must be completed. These inspections must be documented in the Environmental Checklist.

Daily undocumented inspections should also be completed. Visual inspection should include, but not be limited to, the following:

- Leaking seals or lines.
- Stained soils or pavement.
- Leaking secondary containment.
- Cracked tanks/rusted barrels.
- No portable secondary containment.
- Spill response materials not stocked.
- Inventory log up to date.
- Labels.
- Signage.
- No over date materials.
- Security measures (gates/pumps locked).
- Tracked.
- Corrective actions.

5.13 Spill Prevention Control and Countermeasures

The Spill Prevention Control and Countermeasures (SPCC) regulations apply when aggregate aboveground storage capacity is greater than 1,320 gallons in 55 gallon containers or larger, and there is a reasonable expectation of a discharge into a creek, drainage ditch creek, river, or any navigable waters of the United States or adjoining shorelines regardless if they are flowing or dry.

This amount does not include oil in equipment on-site (cranes, etc.).

If this amount is met, oil must be prevented from reaching "Waters of the United States."

An SPCC Plan that includes components on the following will be developed for the project by Overland Contracting Inc. and must be reviewed and complied with by the Contractor:

- Training.
- Spill prevention.
  - Spill potential.
  - Facility containment and drainage.
- Emergency spill information and notification.
- Inspection and records/preventive maintenance.

- Contents of SPCC plans.
- General facilities operations.
- Operations and maintenance (O&M) of equipment to prevent discharges.
- Discharge procedure protocols.
- Pollution control laws, rules, and regulations.
- How and when to do inspections (only those performing them).
- Location and size of the aboveground storage tanks (ASTs) and other bulk storage units.
  - Containment (double walled, spill pallets, containment areas, etc.).
  - Traffic.
  - Pumps.
  - Relation to other storage (3 foot rule).
- Fuel pump operations (on-off switches).
- Emergency shutoff switches.
- Vents.
- Location of spill response materials/sheds.
- Monitored storage levels.
- Location of the emergency shutoff.
- Location of spill response materials.
- General drainage pathways.
- Stay with the vehicle during fueling.
- Inspection for leaks during pump operation.
- Securement of pump nozzle when complete.
- Pump nozzle locks are in place.
- Formal weekly inspections.
  - Assigned employee will do weekly environmental inspection.
  - Documented and action items tracked as needed.

- Site observations.
  - All site personnel.
  - Report any spills, staining, or sheens immediately.

Refer to the Project SPCC Plan for more information and requirements. If oil containing materials are brought into and taken off-site by the Contractor, it must be reported to BV so the SPCC Plan can be updated.

5.13.1 Spill or Release Response

5.13.1.1 Reportable Oil Spill

A reportable spill or discharge is defined as a quantity that possesses the following characteristics:

- Causes a film or "sheen" upon, or discoloration of, surface water or adjoining shorelines.
- Violates applicable water quality standards.
- Causes a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

5.13.1.2 Spill Response Procedure

Spill must be reported immediately to the Overland Contracting Inc. On-site Environmental Manager or Site ESH&S.

Small spills that do not present hazard to on-site personnel:

1. Obtain Safety Data Sheet (SDS) for the spilled material and review for safety requirements.
2. Don proper personal protective equipment (PPE) according to SDS requirements.
3. Stop the release from spreading (turn valve off, rotate drum, divert spill away from drains, property line, etc.).
4. Clean up minor spills or equipment leaks immediately according to SDS specifications:
   - Contain the spill with absorbent pads or socks and excavate the spill and affected media into a compatible container.
   - Seal container, label in accordance with type of waste and required regulatory information, and place in the appropriate storage area.
5. Notify Overland Contracting Inc. On-Site Environmental Manager or ESH&S Manager.

6. Overland Contracting Inc. On-Site Environmental Manager or ESH&S Manager will notify the B&V Corporate Environmental Manager to discuss determination of responsible party and if the spill requires any regulatory notifications. *If regulatory notifications are determined to be required – See below.*

Larger spills that present hazard to on-site personnel:

1. Block off area to restrict access on site (at least 50 feet from spill for flammable materials).

2. Obtain Safety Data Sheet (SDS) for the spilled material and review for safety requirements.

3. Don proper PPE according to SDS requirements.

4. **ONLY if you can do so safely** - Stop the release from spreading (turn valve off, rotate drum, divert spill away from drains, property line, etc.).

5. Notify Overland Contracting Inc. On-Site Environmental Manager or ESH&S Manager.

6. **Overland Contracting Inc. On-Site Environmental Manager or ESH&S Manager will notify B&V Corporate Environmental Manager and Business ESH&S Manager immediately.**

   – Reportable spills must be submitted within 24 hours to regulatory agencies, so this notification of the B&V Corporate Environmental Manager is critical and must occur immediately.

7. Overland Contracting Inc. On-Site Environmental Manager will notify any additional project required contacts.

8. B&V Corporate Environmental Manager will work with site personnel, client, or other responsible parties to make determination if spill is reportable and who is the responsible party **prior to any regulatory notifications**.

9. If Overland Contracting Inc. is the responsible party:

   – B&V Corporate Environmental Manager or designee will contact Clean Harbors Emergency Response Team for environmental cleanup if needed, unless client/contractual requirements require use of another vendor.

   – Overland Contracting Inc. will observe and document any cleanup to ensure it is completed satisfactorily to B&V requirements and waste is labeled, stored, and disposed of properly by the cleanup contractor.

   – **If determined to be a Overland Contracting Inc. reportable spill, the B&V Corporate Environmental Manager will make the necessary calls to regulatory agencies. No Overland Contracting Inc. professional should be calling spills into regulatory agencies without consulting the B&V Corporate Environmental Manager.**

10. If contractor is the responsible party:

    – The contractor is required to contact an environmental response team for cleanup activities.

    – Overland Contracting Inc. will observe and document any cleanup to ensure it is completed satisfactorily to Overland Contracting Inc. requirements and waste is labeled, stored, and disposed of properly by the cleanup contractor.

If determined to be a reportable spill, the Contractor will make the necessary calls to regulatory agencies under their name within the required regulatory timelines.

5.13.2 PCB Management

5.13.2.1 Sources of PCB

Despite a federal ban on the manufacture, processing, and distribution in commerce of PCBs, they can be encountered during demolition or excavation activities. PCB-containing equipment or materials includes those listed in Table 5-1.

Table 5-1 Examples of PCB-Containing Equipment or Materials

Mineral oil-filled electrical equipment manufactured before July 2, 1979
Capacitors or transformers manufactured before July 1979
Dielectric fluids in transformers, capacitors, and electrical components
Protective coatings
Hydraulic fluids
Heat transfer fluids
Caulk
Fluorescent light ballasts
Voltage regulators
Sealants
Plasticizers
Lubricants
Adhesives
Cutting oils
Dedusting agents
Gaskets
Electric cable (plastic)
Sound deadening felts
Air compressor lubricants

5.13.2.2 Source Sampling

All potential sources of PCB-containing equipment or material must be tested and proven to be PCB free prior to exposing workers to materials and equipment that may contain PCBs. Source sampling of suspected PCB containing materials will be under the supervision of a certified industrial hygienist.

5.13.2.3 Discovery of PCB-Containing Equipment or Material

Upon discovery of potential PCB-containing equipment or material, work must cease immediately and the appropriate supervisor must be notified. The Contractor will notify Overland Contracting Inc. as soon as possible. Work area will be barricaded. Work will not resume until authorization is provided by Client that the area is free of PCBs.

5.13.3 Contaminated Soils

5.13.3.1 Materials Management Plan

When contaminated soils are known to exist at the site, the Contractor will develop a Materials Management Plan. The plan will describe how the Contractor will manage contaminated soils to prevent impact to the environment and the workers. The Materials Management Plan will address the following:

- Excavation.
- Worker protection.
- Storage and stockpiling.
- Sampling and analysis.
- Transportation.
- Disposal.

5.13.3.2 Discovery of Contaminated Soils

Upon the discovery of soils that appear to pose an environmental concern or are significantly different in composition and classification than those noted in boring logs or similar tests, the Contractor will immediately stop work and notify Overland Contracting Inc. Overland Contracting Inc. will notify Client and determine if there is a need to make further notifications. Overland Contracting Inc. will decide if the soils need to be sampled to determine the presence and degree of contamination. The sampling performed by Overland Contracting Inc. shall not relieve the Contractor of its obligation to identify and evaluate the contaminants for the protection of employees and the environment. If the contamination exceeds the threshold for regulated soils, a Material Management Plan will be developed by the Contractor before work resumes.

5.13.3.3 Notification

Overland Contracting Inc. will immediately be notified.

Overland Contracting Inc. will notify Client. Any necessary report or notification to governmental agencies is the responsibility of Client.

Overland Contracting Inc. will make the notification to Client and government agencies as soon as possible unless previous arrangements have been made for Client to make the notifications.

Overland Contracting Inc. will immediately notify the Project Manager who will coordinate further communications of the release in accordance with the Overland Contracting Inc. Crisis Communication Plans.

5.13.3.4 Stockpile

Contractor will segregate material of differing types and degrees of contamination to prevent cross contamination of uncontaminated material. During excavation activities, when soils are discovered that appear to pose an environmental concern or are significantly different in composition and classification than those noted in boring logs or similar tests, these soils shall be segregated from other soils until proper testing can confirm the nature of the soils.

Contractor will place stockpiles of excavated soils in dry areas on a minimum 30 mils thick polyvinyl chloride (PVC) sheeting or equivalent. All joints in the underlying PVC sheeting will overlap, with a minimum of 12 inches at the ends. The stockpile will be contained with sediment control devices, such as hay bales or silt fence, placed continuously at the perimeter of the stockpile.

Stockpiles will be covered with minimum 30 mils thick PVC sheeting or equivalent. The sheeting will be secured in place with tie-downs or heavy objects at the end of the workday and during adverse weather conditions. All joints in the cover will have a minimum 12 inch overlap and securing materials will be placed along the joints so that the cover will not be opened by wind action.

The Contractor will maintain the sheeting and needs to repair damage and replace displaced cover sheeting. Contractor will provide protection against run-on or storm water, migration of contaminants, dusting, erosion, and unauthorized contact.

The stockpiled soils will be sampled and analyzed for waste characterization to determine the proper disposal options.

5.14 Wastewater and Storm Water Management

Wastewater and storm water are the most commonly encountered environmental concerns on a construction site. These guidelines must be followed:

- Do not pour anything down a storm drain.
- Do not fuel a vehicle or piece of equipment within 50 feet of a storm water drain.
- Do not store chemicals, paints, or oil products near storm water drains.

- Do not wash vehicles or equipment on-site unless there is an approved wash area that prevents runoff.
- Ensure that concrete trucks are being washed out in washout pits and not on the ground.
- Make sure activities have not created erosion.
- Ensure project has a Storm Water Pollution Prevention Plan (SWPPP) developed and certified by a Professional Engineer that must be followed.
- Ensure affected employees are trained on the SWPPP.
- Complete and track weekly storm water inspections.

Facility-specific information on permitting and storm water/wastewater control measures must be reviewed and followed at all times.

Only approved sources may be discharged on-site.

Under no circumstances are water streams to be combined or allowed to be operated in a way nonconforming to federal, state, or local regulations or permitting conditions.

Non-contact storm water cannot be mixed with contact storm water or process water.

No water (process, storm water, or otherwise) is permitted to be pumped, transferred, diverted, or drained on-site without approval through the Water Discharge Permit as detailed in SAF-078.

5.14.1 Erosion and Sediment Controls

Storm drains, open ditches, water bodies, or wetlands will be protected from receiving sediment-laden runoff through the use of Best Management Practices (BMPs) such as swales, filter sock, hay bales, or silt fences. Washouts in seeded areas and rip rap must be repaired in a timely manner.

Erosion and sediment controls must be replaced or cleaned at 50 percent capacity.

5.14.2 Stabilized Construction Entrance/Exit

Points of entrance and exit to a construction site must be stabilized to reduce the tracking of mud and dirt onto public or clean roads by construction vehicles. When mud and dirt is tracked onto public roads or adjacent public rights-of-way, the Contractor will sweep or vacuum the street to remove the mud, dirt, or sediments.

5.14.3 Vehicle and Equipment Cleaning

Vehicle and equipment cleaning procedures and practices must eliminate or reduce the discharge of pollutants to surface waters or inlets/drains. Procedures and practices include, but are not limited to, the following:

- Using off-site facilities.
- Washing in designated contained areas only.

- Washing without the use of detergents or soaps.
- Eliminating discharges to the inlets/drains by filtering the wash water.
- Training employees and Contractors in proper cleaning procedures.

5.15 Concrete Washout Area

The Contractor shall require concrete washouts to be performed off-site whenever possible. On-site concrete washout areas will be located at least 50 feet from storm drain inlets, open drainage facilities, watercourses, or wetlands in an area designated by Black & Veatch.

The concrete washout area will be designed to prevent runoff from this area through the use of a temporary pit or bermed area large enough to contain the liquid and solid waste. The area must be large enough to contain the anticipated quantity of concrete washout materials with no more than 75 percent capacity. Liners must be a minimum of 10 mil plastic. Contractors must perform on-site concrete washouts in designated areas.

Only concrete from mixer truck chutes shall be washed into the concrete washout. Concrete washout from concrete pumper bins can be washed into concrete trucks and discharged into the designated washout area or properly disposed of off-site.

Once concrete wastes are washed into the designated area and allowed to harden, the concrete shall be broken up, removed, and disposed of as solid waste. The Contractor will not stockpile on unlined areas. The Contractor will post a sign adjacent to each temporary concrete washout facility to inform concrete equipment operators to utilize the proper facilities.

Concrete washout areas must be maintained to ensure no tears, holes, or debris are in the concrete washout area and the surrounding area is free of residual materials.

5.16 Air Emissions and Odor Control

5.16.1 Vehicle Exhaust

Contractor will ensure that all its vehicles are in good repair and conform to the relevant regulatory requirements for emissions standards. The use of equipment that fails to meet current emissions limits will not be permitted until it has been serviced and retested. Contractor will maintain records of equipment maintenance and defect reports in a designated file, and these records will be made available as required.

Vehicle exhausts will be directed vertically upwards where possible and directed away from the ground, at a minimum. Wherever possible, equipment will not be left running for long periods when not directly in use. Where appropriate, electrically-powered equipment will be used in place of diesel powered equipment.

When diesel powered equipment is used, the low emitting diesels are preferred.

Requirements for monitoring, testing, and reporting of air emissions and odor control practices should be included in any site permits and must be reviewed, followed, and understood. Any personnel adding materials that may cause emissions, testing equipment covered by site permits, or otherwise causing fugitive emissions on-site, must consult and report these activities to

Overland Contracting Inc. prior to starting any activities to ensure compliance with site permits. Notifications to the Client and the regulating authority must be given prior to any activities covered in site permits within the guidelines established.

5.16.2 Fugitive Dust Control

Fugitive dust can be generated from activities such as demolition, site preparation, excavation, earth moving, and vehicular traffic associated with site ingress and egress and equipment delivery.

Contractor will plan, locate, and control worksite activities that have the potential to generate dust or smoke, so that nearby sensitive receptors are not adversely affected. Contractor will implement dust control measures, such as water or chemical dust suppression, when conditions are conducive to dust migrating from the construction site. During earthworks and excavations, the site will be kept damp during dry weather and will be revegetated, sealed, or completed as soon as possible.

Only permit-compliant water may be used for dust suppression in accordance with all applicable laws and regulations.

For demolition, enclosed chutes will be used for dropping to ground level demolition materials that have the potential to cause dust.

Vehicles transporting materials capable of generating dust to and from the site will be suitably sheeted on each journey to prevent release of materials and particulate matter. The sheeting material will be maintained in good order and will be free from excessive rips and tears. A maximum speed of 10 miles per hour (mph) will be strictly enforced over all unpaved surfaces. Reductions to this speed limit may be applied at the discretion of Overland Contracting Inc. or Client where dust problems dictate.

Unpaved roads will be routinely damped down, especially during dry periods and according to weather conditions. Where haul routes run over materials with high dust raising potential that cannot be satisfactorily controlled by watering or other methods, temporary surfacing must be installed by the Contractor.

Burning of wastes or unwanted materials will not be permitted on-site.

5.16.3 Odor

In residential areas or other locations where the public would be exposed, the Contractor will minimize the release of objectionable odors.

5.17 Site Clearing and Resource Protection

5.17.1 Vegetation and Site Clearing

Areas that are not to be disturbed during construction activities will be marked by the Contractor with temporary fencing or substantial barriers that prevent entry by vehicles or heavy equipment. Sufficient setback will be provided to protect the root systems of trees and shrubs that are not to be disturbed. Heavy equipment, vehicular traffic, or storage of construction materials are not permitted within the protected areas.

The Contractor will report damage to trees or shrubs to Overland Contracting Inc. within 24 hours of discovery. Temporary roadways, stockpiles, and lay-down areas will be located to avoid stand of trees, shrubs, and grass.

5.17.2 Threatened and Endangered Species

When the Contractor suspects a threatened or endangered species has been identified, any work activity that may impact their environment, including unnatural noise and light, must cease and Overland Contracting Inc. must be notified immediately. Overland Contracting Inc. will not permit work to continue until it has been determined that the Contractor's activities will not impact threatened or endangered species.

5.17.3 Protection of Historic and Archaeological Resources

In the event that historic or prehistoric archaeological resources, such as arrowheads, pottery, and structures, are discovered during trench excavations, demolition, or other site disturbing activities, work activity in the immediate area of discovery will stop. The area where the artifacts are discovered will be secured and flagged as being off limits for work. The artifacts will not be touched, moved, or further disturbed. The nearest supervisor will be notified. The Contractor will immediately notify Overland Contracting Inc. Overland Contracting Inc. will notify Client and determine if there is a need to make further notifications.

Construction will only proceed in the affected area after Client and Overland Contracting Inc. have reviewed the discovery and have authorized construction activities to resume.

5.17.4 Human Remains Discoveries

If bones or other evidence of human remains are identified during construction, the Contractor will immediately stop work on activities that could further harm the remains and will immediately notify Overland Contracting Inc. The area where the remains are discovered will be secured and flagged as being off limits for work. The remains will not be touched, moved, or further disturbed. In all cases, Contractor will take due care to ensure that the remains, regardless of origin, are afforded the utmost respect and protection. The exact location and time of discovery will be immediately forwarded to Client who will be responsible for managing the discovery. Work will not resume until authorized by Client and Overland Contracting Inc.

5.18 Noise Control

Contractor must give consideration to the effects of this noise on people working in operations at the construction site, and on nearby residents, businesses, and institutions.

Construction activities that are the source of the loudest noises include earth moving, excavating, blasting, pile driving, use of pneumatic tools, fabrication and assembly of structural steel, and operation of heavy equipment and vehicles.

The adoption of appropriate control measures and anticipation of complaint-causing activities will assist in the mitigation of these effects. Measures to be implemented to minimize noise or control its effect on sensitive receptors include the following:

- Properly maintaining equipment and using mufflers whenever possible.

- Performing certain noisy operations only during the day or during normal work hours for the project.
- Adopting and implementing work practices to mitigate the effects of noise, such as shutting off equipment not in constant use and avoiding unnecessary revving of vehicles.
- Siting noisy equipment and operations away from sensitive noise boundaries when possible. When not possible, controlling noise by the erection of acoustic shielding or siting behind spoil heaps as appropriate.
- Loading and unloading vehicles, dismantling site equipment, such as scaffolding, or moving equipment or materials around the site to minimize noise generation and, when possible, these activities will be conducted away from noise sensitive areas.
- Limiting vehicle and equipment speeds to 10 mph on-site for the safety of the workforce and to minimize disturbance from noise and dust.
- Using electrically-powered equipment instead of diesel-powered equipment whenever feasible.

5.19 Community Relations

Contractor personnel should not make any comments to the public or media regarding anything to do with the project or environmental incidents. Any requests should be forwarded to the Overland Contracting Inc. and client for response.

The objective of a community relations plan is to ensure that good public relations are maintained at all times during the construction project. Complaints must be dealt with swiftly and, when appropriate, remedial action will be taken.

5.19.1 Responsibilities

Client and Overland Contracting Inc. have overall responsibility for undertaking all communications with outside third parties. Contractors receiving complaints on-site will immediately contact Overland Contracting Inc., who will report the complaints to Client.

5.19.2 Management Measures

Overland Contracting Inc. and Client will seek to set up and maintain good public relations through a program that informs the public of the project and its schedules and by being available to answer questions about the project in an informed and consistent manner. In the event of unusual activities, including work performed outside of normal hours, the Contractor will notify Overland Contracting Inc., who will notify Client in advance. Client will, in turn, notify all affected neighbors.

Complaints from neighbors or other parties will be treated seriously and the cause will be fully investigated. Overland Contracting Inc. will log the complaint and, when appropriate, remedial action will be taken. The complainant will be informed by Client of the action that has been taken.

Neighborhood liaison issues will be routinely discussed at the site management meetings. Complaints will be actively followed up and corrective action will be taken, as appropriate.

5.19.3 Documentation

Overland Contracting Inc. will record all complaints from neighbors or other parties in its project log. This will provide a permanent record of the performance of the project. Overland Contracting Inc. will maintain copies of all correspondence from Client regarding complaints with neighbors on-site for the duration of the project.

5.20 Training

Anyone handling, using, transporting, or storing a hazardous material is required to have documented training in the following:

- How to stop a release.
- How to select the proper PPE.
- How to confine a release.
- How to collect, absorb, and dispose of the residues.
- How to decontaminate equipment.
- How to report and notify incidents.

5.21 Permit Conditions and Approval Requirements

Contractor will identify all relevant federal, state, and local permits or permit modifications or certifications needed to implement the construction activity.

Contractor will provide a written plan of action for complying with the identified permits during the construction phase of the project. A copy of the plan will be included as an addendum to the Contractor environmental operations program.

5.22 Noncompliance

Any unexpected noncompliance with any site permits or regulations must be reported to the Overland Contracting Inc. Environmental Manager immediately and proper notifications to the Client must be given in accordance with permit requirements.

Any planned activity that may require operating outside allowed conditions under permit requirements must be coordinated with the Overland Contracting Inc. Project Manager and the Client so proper advance notice to regulators can occur.

6.0 Figures

Figure 1 Competent Persons Designation (SAF-010)

Figure 2 Loss Management Monthly Summary (SAF-099)

Figure 3 Safety Task Assignment (SAF-068)

Figure 4 Weekly Safety Meeting Report (SAF-105)

Figure 5 Critical Lift Worksheet (SAF-086)

Figure 6 Project First Aid Log (SAF-113)

Figure 7 Resource and Emergency Contact List (SAF-116)

Figure 8 Work Area Daily Inspection Checklist (SAF-081)

Figure 9 Pre-Project Substance Abuse Test (SAF-101)

Figure 10 Violation Notice (Contractor) (SAF-076)

Figure 11 Danger Tag (SAF-108)

Figure 12 Incident Investigation (Preliminary Accident/Illness) (SAF-034)

Figure 13 Incident Investigation (Injury/Illness) (SAF-031)

Figure 14 Incident Investigation (Near Miss/Property Damage) (SAF-033)

Figure 15 Fire Extinguisher Inspection Log (SAF-023)

Figure 16 Job Hazard Analysis Risk Assessment (SAF-039)

Figure 17 GFCI Testing Log (SAF-024)

Figure 18 Crane Monthly Inspection (SAF-015)

Figure 19 Project Combustible and Flammable Material Storage Requirements (SAF-112)

Figure 20 Chemical Storage Area Inspection Log (SAF-107)

Figure 21 Project Scaffold Tags (SAF-115)

Figure 22 Confined Space Entry Permit (SAF-012)

Figure 23 Excavation and Trench Permit (SAF-021)

Figure 24 Welding, Cutting, and Heating Permit (SAF-079)

Figure 25 Steel Erection Checklist (SAF-117)

Figure 26 Concrete Anchor Bolt Release (SAF-096)

Figure 27 Perimeter Guardrail Turnover (SAF-059)

Figure 28 Work Rules (Occupational Safety and Health Regulations) (SAF-082)

Figure 29 Equipment Operator's Daily Checklist (SAF-020)

Figure 30 First Aid Responder List (SAF-110)

Figure 31 Telephoned Bomb Threat Checklist (SAF-118)

Figure 32 Project Security Regulations (SAF-114)

Figure 33 Work Rules Receipt (SAF-119)

Figure 34 Identification Badge Envelope (SAF-111)

Figure 35 After Hours Access Request (SAF-002)

Figure 36 Vehicle Pass Application (SAF-075)

Figure 37 Authorized Signature Card (SAF-005)

Figure 38 Equipment and Material Removal Permit (SAF-019)

Figure 39 Environmental Incident Report (SAF-109)

Figure 40 Water Discharge Permit (SAF-078)

Figure 41 Request for Lower-Tiered Subcontractor Usage (SAF-102)

Figure 42 Grating Removal/Open Hole Permit (SAF-097)

Figure 43 Confined Space Entry Hazard Assessment (SAF-011)

COMPETENT PERSONS DESIGNATION

Project No. _____ Project Name _____ Date _____

Site _____ Contractor _____ Filed by _____

OSHA Standard	Applies to Contractor (Yes/No)	Designated Competent Person Employee Name
General Safety		
Health and Environmental Controls		
Ionizing Radiation		
Nonionizing Radiation		
Gases, Vapors, Fumes, Dusts, Mists		
Ventilation		
Hazard Communication		
Lead		
Personal Protective Equipment		
Hearing		
Respirator Protection		
Materials Handling, Storage		
Rigging Equipment for Material Handling		
Welding and Cutting		
Welding, Cutting, and Heating		
Electrical		
Wiring Design and Protection		
Scaffolding		
Scaffolding		
Fall Protection		
Fall Protection Criteria and Practices		
Training		
Cranes, Derricks		
Cranes and Derricks		
Hoists and Elevators		
Motor Vehicles and Equipment		
Motor Vehicles		

COMPETENT PERSONS DESIGNATION

OSHA Standard	Applies to Contractor (Yes/No)	Designated Competent Person Employee Name
Excavations		
Specific Excavation Requirements		
Requirements for Protective Systems		
Concrete and Masonry Construction		
General Requirements		
Cast-In-Place Concrete		
Lift-Slab Operations		
Steel Erection		
Bolting, Riveting, Fitting-Up, Etc.		
Tunnels, Shafts, Caissons		
Tunnels and Shafts		
Compressed Air		
Demolition		
Preparatory Operations		
Chutes		
Mechanical Demolition		
Blasting and Use of Explosives		
General Provisions		
Blaster Qualifications		
Misfires		
Power Transmission and Distribution		
Overhead Lines		
Construction in Energized Substations		
Stairways and Ladders		
Ladders		
Training Requirements		
Toxic and Hazardous Substances		
Asbestos		
Toxic and Hazardous Substances		

LOSS MANAGEMENT MONTHLY SUMMARY

Date _____

Project Name _____

Subcontractor Name _____

MONTHLY SUMMARY

Number of subcontractor employees working on the project during month _____

Number of lower-tiered subcontractor employees working on the project _____

Subcontractor direct-hire man-hours worked _____

Lower-tiered subcontractor direct-hire man-hours worked _____

Number of pre-project assignment substance abuse tests during month No. passed _____ No. failed _____

Number of 10% monthly random substance abuse tests during month No. passed _____ No. failed _____

Number of reasonable suspicion substance abuse tests during month No. passed _____ No. failed _____

Number of post-accident substance abuse tests No. passed _____ No. failed _____

LOWER-TIERED SUBCONTRACTOR INFORMATION

Lower-Tiered Subcontractor Company Name	Reason for Use During the Month	Hours Worked During Month

10% RANDOM LIST FOR PREVIOUS MONTH*

Employee Name	Company Name

Employee Name	Company Name

*Should include 10% of total workforce (subs + lower-tiered) for month.

If incidents occurred during month, describe below:

SUBCONTRACTOR ACKNOWLEDGMENT OF LOSS MANAGEMENT MONTHLY SUMMARY REPORT

Printed Name _____ Signature _____

SUPERVISOR SAFETY CHECK (SSC) COMPLETED? ☐ **YES** ☐ **NO** If no, please explain below:

CORRECTIVE ACTIONS

What I Found	What I Corrected

POST TASK DEBRIEFING

1. Did job task go as planned? ☐ Yes ☐ No If no, please explain below:

2. Would you perform work any differently if you had to do the task over? ☐ Yes ☐ No If no, please explain below:

3. A. How was the Housekeeping at the end of the shift? ☐ Acceptable ☐ Unacceptable Please explain why below:

   B. Potential Safety Hazards in the Work Area: ☐ Corrected ☐ Uncorrected Please list potential hazards below:

4. **Has Supervisor Asked All Employees if there were any Injuries?** ☐ Yes ☐ No If yes, please explain below:

IF ANY INJURY OCCURRED, NOTIFY THE SAFETY DEPARTMENT ASAP!

Supervisor/Foreman _____ (Print/Sign) _____ (Date) _____ (Time)

SUPERVISOR/SAFETY REVIEW

Received/Reviewed By _____ (Print/Sign) _____ (Date) _____ (Time)

SAFETY TASK ASSIGNMENT

Project Name _____ Project No. _____

Contractor _____ Master JHA No. _____

DESCRIPTION OF WORK

Supervisor/Foreman _____ Time _____ Date _____

Weather Condition	Ground Condition	Temperature	Job Impact
☐ Sunny ☐ Cloudy ☐ Rainy ☐ Snow - Accumulation ____ in. ☐ Windy > 10 mph ☐ Other _____	☐ Dry ☐ Wet ☐ Muddy ☐ Snow/Ice – covered with ____ in. ☐ Other _____	☐ ≤ 0° F ☐ 0-32° F ☐ 32-45° F ☐ 45-60° F ☐ 60-80° F ☐ 80-90° F ☐ 90+° F HEAT ILLNESS PLAN REQUIRED IN TEMPS >80° F	☐ Rain out ☐ Snow out ☐ Severe storm ☐ Other _____

Today's weather forecast _____ Humidity _____ %

TOOLS

List the tools needed to complete today's tasks.

EQUIPMENT

List the equipment needed to complete today's tasks.

SITE ACTIVITIES/ADJACENT WORK

Activities that may impact our tasks:

Figure 3

MEANS TO CONTROL SITE HAZARDS (Check only those that are applicable to the work you are performing)

Permits
- ☐ Confined Space
- ☐ Hot Work (Electrical)
- ☐ Welding and Cutting
- ☐ Trenching and Excavation Notice
- ☐ One Call
- ☐ Grating/Handrail Removal
- ☐ LOTO (PTW)
- ☐ Critical Lift Plan
- ☐ Other _____

Personal Protective Equipment
- ☐ Normal PPE
  - Hard Hat
  - High Visibility Vest
  - Safety Glasses
  - Work Boots
  - Gloves
- ☐ Fire Retardant Clothing
- ☐ Specialty Gloves _____ type
- ☐ Additional Foot Protection _____
- ☐ Face Shield
- ☐ Respirator
- ☐ Hearing Protection (ear plugs)
- ☐ Fall Protection
- ☐ Seat Belts
- ☐ Burning/Chemical Goggles
- ☐ Monogoggles
- ☐ Personal Flotation Device
- ☐ Other _____

Tools
- ☐ Daily Inspection
- ☐ Proper Tools for the Job
- ☐ Handles and Guards in Place
- ☐ No Modified Tools

Emergency Information/Equipment Location
- ☐ Fire Extinguishers/Current Inspection
- ☐ Safety Shower/Eyewash
- ☐ Evacuation Route
- ☐ Muster Area Identified _____
- ☐ MSDS Review
- ☐ Clinic/Hospital Location
- ☐ CPR/First Aid
- ☐ Emergency Phone Numbers

General
- ☐ Flammable Storage
- ☐ Appropriate Signage Posted
- ☐ Slip/Trip Hazards Identified
- ☐ Housekeeping in Order

Fall Protection
- ☐ Personal Fall Arrest System (inspected)
- ☐ Proper Anchorage Point
- ☐ Lifeline
- ☐ Personnel Platform (man basket)
- ☐ Daily Inspections
- ☐ Double Lanyards
- ☐ Employees Trained? Documented?
- ☐ Competent Climber Certification
- ☐ Rescue Kit/Equipment Accessible
- ☐ Hole Covers (marked hole cover)
- ☐ Handrails 42" ± 3" – 200 lbs
- ☐ Mid-rail 21" ± 3"

Excavations
- ☐ Properly Barricaded
- ☐ Shoring/Sloping/Benching Required (5 feet)
- ☐ Proper Access (4 feet)
- ☐ Inspected by Competent Person
- ☐ Atmospheric Testing
- ☐ Confined Space
- ☐ Other _____

Welding
- ☐ Condition of Welding Leads
- ☐ Flammables/Combustibles Protected
- ☐ Welding Screens
- ☐ Grounding
- ☐ Fire Blanket
- ☐ Fire Extinguisher/Inspected
- ☐ Proper Clothing
- ☐ Welding Hood
- ☐ Welding Gloves
- ☐ Sleeves/Jackets
- ☐ Fire Watch
- ☐ Hex Chrome/Lead
- ☐ Other _____

Electrical
- ☐ GFCI Test
- ☐ Extension Cord Inspections
- ☐ Cords Routed Out of Walkways/7' Above Ground
- ☐ Electrical Tool Inspected
- ☐ Lighting
- ☐ Minimum Approach Distance Considered
- ☐ Other _____

Scaffolding/Ladder
- ☐ Tied Off
- ☐ Inspected by Competent Person
- ☐ Tagged
- ☐ Proper Ladder Selected
- ☐ Fall Protection for over 12' Climb
- ☐ Other _____

Grinders
- ☐ Wheel Size
- ☐ Wheel Speed
- ☐ Wheel Type
- ☐ Handle
- ☐ Deadman Switch

Confined Space
- ☐ Air Sampling
- ☐ Engulfment
- ☐ Entrapment

Crane/Lifting Equipment
- ☐ Certified Operator
- ☐ Qualified Signaler
- ☐ Proper Hand Signals
- ☐ Inspected
- ☐ Proper Maintenance
- ☐ Communications
- ☐ Outriggers Fully Extended
- ☐ Manual Lifting Equipment Inspected
- ☐ Proper Rigging Practices Identified
- ☐ Overhead Hazards
- ☐ Proper Barricade
- ☐ Lift Log
- ☐ Tag Lines
- ☐ Other _____

KEY ELEMENTS

LEADERSHIP

SKILLS & TRAINING

PEOPLE: EMPLOYEE INVOLVEMENT (EIP)

IDENTIFICATION OF SITE HAZARDS

Physical Hazards	Health Hazards	Site Security	AC Minimum Approach Distance	
			Voltage in kilovolts (kV)	Non-Qualified
☐ Falls From Elevations	☐ Heat Stress	☐ Inner City	Up to 50	10'0"
☐ Slips, Trips, Falls	☐ Cold Stress	☐ Night Work	50.1 to 72.5	10'9"
☐ Vehicle Traffic	☐ Chemical Exposure	☐ Rural	72.6 to 121	12'5"
☐ Electrical Shock	☐ Radio Frequency (RF) (EME)	☐ Lighting	138 to 145	13'2"
☐ Underground Utilities	☐ Noise Exposure (> 85 dBA)	☐ Building/Rooftop Access	161 to 169	14'0"
☐ Trash/Debris/Dunnage	☐ Hex Chrome/Arsenic	☐ Other _____	230 to 242	16'5"
☐ Rough Terrain	☐ Lead/Asbestos	☐ Other _____	345 to 362	20'5"
			500 to 550	26'8"
			765 to 800	35'0"

TODAY'S TASKS

☐ **Stretch & Flex completed**

Sequence of Basic Job Steps	Potential Hazards	Recommended Action or Procedures

Hazard Selection for the Middle Column: SB = Struck By; CW = Contact With; CBy = Contacted By; CB = Caught Between; SA = Struck Against; CI = Caught In; CO = Caught On; O = Overexertion or Repetitive Motion; FS = Fall at the Same Level; FB = Fall to Below; E = Exposure to Chemicals, Noise, etc.

CREW SIGN-OFF (Signature means you have participated in the STA process)

Why I Will Work Safely Today	Print Name	Signature	Post Initials

☐ Weather Conditions Evaluated ☐ Hazards Identified ☐ All Identified Hazards Eliminated or Controlled

☐ Master JHA Reviewed ☐ Review Today's Tasks ☐ All Training Requirements Have Been Met

☐ EIP: Name of Team Member(s) Performing EIP Review _____

☐ **I Understand the Safety Aspect of Today's Work Plan and Have Communicated Them to the Members of My Team. If Not…**

STOP

Contact Your Supervisor or Safety Representative for Assistance

Supervisor/Foreman _____ (Print/Sign) _____ (Date) _____ (Time)

Figure 3

WEEKLY SAFETY MEETING REPORT

Date _____ File No. _____

Site _____ Contractor _____

Supervisors Conducting Meeting _____

All Supervisors Attending Meeting _____

SUMMARY OF ITEMS DISCUSSED

ACCIDENTS AND INJURIES DISCUSSED

EMPLOYEE COMMENTS AND SUGGESTIONS

EMPLOYEES ATTENDING MEETING

1.	14.	27.	40.
2.	15.	28.	41.
3.	16.	29.	42.
4.	17.	30.	43.
5.	18.	31.	44.
6.	19.	32.	45.
7.	20.	33.	46.
8.	21.	34.	47.
9.	22.	35.	48.
10.	23.	36.	49.
11.	24.	37.	50.
12.	25.	38.	51.
13.	26.	39.	52.

WEEKLY SAFETY MEETING REPORT

CHECK SUBJECTS DISCUSSED

- ☐ Abrasive Wheels
- ☐ Accident Reporting
- ☐ Air Hoses
- ☐ Air Tools
- ☐ Arc Welding
- ☐ Backing Equipment
- ☐ Backup Alarms
- ☐ Batteries
- ☐ Blasting and Explosives
- ☐ Blocking
- ☐ Carbon Monoxide
- ☐ Chemical Handling
- ☐ Clothing
- ☐ Concrete Burns
- ☐ Confined Entry
- ☐ Connecting and Bolting
- ☐ Conveyors
- ☐ Cranes
  - ☐ Chokers and Slings
  - ☐ Crane Capacity
  - ☐ Crane Inspections
  - ☐ Hand Signals
  - ☐ Rigging
  - ☐ Swing Radius
  - ☐ Tag Lines
- ☐ Electrical
  - ☐ Cords
  - ☐ Equipment Grounding Program
  - ☐ Ground Fault Circuit Interrupters
  - ☐ Lockouts
  - ☐ Tools
- ☐ Emergency Numbers
- ☐ Employee Parking
- ☐ Environmental
  - ☐ Spill Response
  - ☐ Historical/Remains
  - ☐ Contaminated Soils
  - ☐ Waste Management
  - ☐ Habitats
  - ☐ Recycling
- ☐ Equipment Maintenance
- ☐ Excavations
- ☐ Eye Protection
- ☐ Defective Equipment
- ☐ Dismounting Equipment
- ☐ Drinking and Drugs
- ☐ Dust
- ☐ Fall Protection
  - ☐ Floor Openings
  - ☐ Guardrails
  - ☐ Safety Belts and Lanyards
  - ☐ Safety Lines
  - ☐ Safety Nets
  - ☐ Scaffolding
  - ☐ Skip Boxes
- ☐ Fire
  - ☐ Extinguishers
  - ☐ Fueling
  - ☐ Gasoline
  - ☐ Safety Cans
  - ☐ Welding and Cutting
- ☐ First Aid
- ☐ Frostbite
- ☐ Gas Lines
- ☐ Gas Welding
- ☐ Gloves
- ☐ Grinding
- ☐ Hard Hats
- ☐ Haul Roads
- ☐ Hearing Protection
- ☐ Heat Exhaustion
- ☐ Horseplay
- ☐ Housekeeping
- ☐ Ladders
- ☐ Laser Beams
- ☐ Lifting Techniques
- ☐ Lighting
- ☐ Lightning Storms
- ☐ Material Handling
- ☐ Material Storage
- ☐ Out in the Mud
- ☐ Overexertion
- ☐ Overhead Lines
- ☐ Painting
- ☐ Pickup Abuse
- ☐ Pile Driving
- ☐ Pinch Points
- ☐ Pride in Workmanship
- ☐ Project Speed Limits
- ☐ Public Relations
- ☐ Railroad Crossing
- ☐ Respirators
- ☐ Riding Equipment
- ☐ Safety Attitude
- ☐ Safety Equipment
- ☐ Sandblasting
- ☐ Sanitation
- ☐ Seat Belts
- ☐ Snow and Ice
- ☐ Steps
- ☐ Stripping
- ☐ Telephone Cables
- ☐ Theft
- ☐ Traffic Controls
  - ☐ Flagmen
  - ☐ Flashers
  - ☐ Reflectorized Vests
  - ☐ Signs and Barricades
- ☐ Trenches
  - ☐ Ladder
  - ☐ Overhead Lines
  - ☐ Slopes
  - ☐ Spoil Pile
  - ☐ Trench Box
  - ☐ Underground Utilities
- ☐ Trucking
- ☐ Vandalism
- ☐ Water Safety
  - ☐ Grab Pole
  - ☐ Life Boat
  - ☐ Life Vest
  - ☐ Oil Spill Boom
  - ☐ Ring Buoys
- ☐ Wind

CRITICAL LIFT WORKSHEET

Lift Description _____ Lift Date _____

1. Project Name:	2. Contractor:	3. Lift Location:	4. Crane Manufacturer:
5. Model Number:	6. Serial Number:	7. Counter Weight Used:	8. Total Boom/Jib Length at Time of Lift: _____ ft
9. Max. Radius During Lift: Pick: _____ Swing: _____ Set: _____	10. Direction and Degrees of Swing CW: _____ CCW: _____ Rotation <0: _____	11. Lift Elevation: _____ ft max _____ ft min	12. Boom Angle: Pick: _____ Swing: _____ Set: _____
13. Will Jib be Used? _____ Yes _____ No Length: _____ ft Weight: _____ lbs	Erected: _____ Stowed: _____	14. Manufacturer's minimum rated capacity from chart as outlined in Blocks 8-13: _____ lbs	

15. Crane components and rigging weights:

Jib/Boom Extensions	0	lbs
Jib Ball and Hook	0	lbs
Jib Hoist Line	0	lbs
Main Block, Ball, and Hook	0	lbs
Main Hoist Line	0	lbs
Slings and Miscellaneous Lifting Equipment	0	lbs
Lifting Beam or Bars	0	lbs
Other	0	lbs
Total:	0	lbs

16. Load description and weight:

Pick: _____ lbs

17. Who determined the weight of load and lift? _____

How?

18. Total load weight during lift: _____ lbs

19. Load percentage of crane capacity: 0%

20. Rigging Safety Factor 5 to 1? _____ Yes _____ No

21. Choker size and condition:

22. Tag line required? _____ Yes _____ No

23. Communication/signaling method to be used?

24. Bearing Conditions:

Soil Type and Condition _____

Calculation Required? _____

If yes, explain: _____

Crane Mats Required? _____

If yes, size and description: _____

Outrigger pads at least 3 times size of float used? _____

25. Hazards:

Electrical? _____ Yes _____ No If yes, explain: _____

Precautions: _____

Underground? _____ Yes _____ No If yes, explain: _____

Precautions: _____

Locates Completed? _____ Yes _____ No

Precautions: _____

26. When will lift meeting be conducted?

27. Signatures

1. Crane Operator _____ Date _____

2. Supervisor _____ Date _____

3. Supervisor of Rigger _____ Date _____

4. Signal Person _____ Date _____

CRITICAL LIFT WORKSHEET

DOCUMENTS REQUIRED TO BE SUBMITTED FOR CRITICAL LIFTS 20 TONS OR GREATER, OR THAT REACH 75 PERCENT OF THE LIFTING DEVICE'S RATED LOAD CHART

	Attached	NA		Attached	NA
Operator Certification Card	☐	☐	Spreader Bar Certification and Annual Inspection	☐	☐
Operator Department of Transportation Health Card	☐	☐	Annual Crane Inspection	☐	☐
Showing Drug Screen	☐	☐	Copy of Load Chart	☐	☐
Certified Signal Person	☐	☐	Elevation View Sketch	☐	☐
Plan View Sketch	☐	☐			

To avoid delays, documentation should be turned in 48 hours in advance of the lift date for review.

DOCUMENTS REQUIRED TO BE SUBMITTED FOR CRITICAL LIFTS BELOW 20 TONS, OR THAT DO NOT REACH 75 PERCENT OF THE LIFTING DEVICE'S RATED LOAD CHART

(SUSPENDED PERSONNEL BASKET WILL STILL REQUIRE FULL DOCUMENTATION TURNED IN 48 HOURS IN ADVANCE)

	Attached	NA
Copy of Load Chart	☐	☐
Annual Crane Inspection	☐	☐

All other relevant documentation shall be available on-site for review by Overland Contracting Inc. personnel.

To avoid delays, documentation should be turned in 24 hours in advance of the lift date for review.

PROJECT FIRST AID LOG

Date	Name	Foreman	Part Affected	Inj. Date	Company	Cause	Recommendation

Figure 6

RESOURCE AND EMERGENCY CONTACT LIST

Company	Position	Name	Department	Function	Office Phone	Cell Phone	Email
	General Counsel		Legal	Legal Issues			
	Corporate Security Manager		Security	Security			
	VP, Corporate Safety and Security Services		Safety	Safety			
	Manager Industrial Hygiene and Operational Environmental Service		Safety	Industrial Hygiene			
	Manager Industrial Hygiene and Operational Environmental Service		Safety	Operational Environmental Services			
	Director of Media Relations		Communications	Media Communications			
	Director of Corporate Communications		Communications	Media Communications			
	Senior Manager of Media Relations		Communications	Media Communications			
	Chief Officer		Administration	Safety Services			
				Media Communications			
	Senior Environmental Professional		Environmental Services	Environmental Permits			
	DOT Hazmat Employee		Logistics and Procurement	DOT Hazmat Shipping SME			
				Air SME			
				Water SME			
				Permitting SME			
				General SME			
				Wetland SME			
				Etc.			
	Fire						
	Local Police						

RESOURCE AND EMERGENCY CONTACT LIST

Company	Position	Name	Department	Function	Office Phone	Cell Phone	Email
	State Police						
Waste Disposal Firms	Sanitary						
	Construction & Debris						
	Special Waste						
	Universal Wastes						
	Hazardous Wastes						
	Excess Soils						
Agencies	Environmental		Federal				
	Fish and Wildlife		Federal				
	Natural Resources		Federal				
	CDC		Federal				
	US Corps of Engineers		Federal				
Agencies	Environmental		State				
	Fish and Wildlife		State				
	Natural Resources		State				
	Historic Preservation Office		State				
	Health		State				
	Planning		Local				
	LEPC		Local				
	SERC		State				
Services	Hazardous Materials						
	Remediation Firm						
	HAZMAT Response Team						
	Environmental Laboratory Services						

WORK AREA DAILY INSPECTION CHECKLIST

Project Name _____

Project No. _____ Date _____

Contractor _____ Inspection Conducted By _____

C = Compliant **NC** = Non-Compliant **NA** = Not Applicable

Housekeeping and Sanitation	**C**	**NC**	**NA**	**Location/Remarks**
1. General neatness of work areas	☐	☐	☐	
2. Passageways and walkways clear	☐	☐	☐	
3. Adequate lighting	☐	☐	☐	
4. Adequate water provided	☐	☐	☐	
5. Sanitary facilities furnished/maintained	☐	☐	☐	
Fall Protection	**C**	**NC**	**NA**	**Location/Remarks**
1. General trades - 6 foot fall rule applies	☐	☐	☐	
2. Employees tied to adequate anchorage points	☐	☐	☐	
3. Harness/lanyards in good condition	☐	☐	☐	
4. Standard guardrails in compliance	☐	☐	☐	
5. Openings to lower level properly guarded	☐	☐	☐	
6. Floor opening covered, secured, and marked	☐	☐	☐	
Electrical Installations	**C**	**NC**	**NA**	**Location/Remarks**
1. Temporary wiring systems installed/protected	☐	☐	☐	
2. Covers installed on "hot" panels	☐	☐	☐	
3. Electrical danger signs posted	☐	☐	☐	
4. Proper lockout/tagout procedures used	☐	☐	☐	
5. GFCI protection used	☐	☐	☐	
6. Extension cords in good condition	☐	☐	☐	
7. Extension cords routed to eliminate trip hazards	☐	☐	☐	
8. Temporary lighting bulbs protected	☐	☐	☐	
9. Temporary outlets not overloaded	☐	☐	☐	
Trenching and Excavation	**C**	**NC**	**NA**	**Location/Remarks**
1. One call made for location of existing utilities	☐	☐	☐	
2. Utilities have been identified	☐	☐	☐	
3. Competent person performs daily inspections	☐	☐	☐	
4. Proper slope/bench/shoring if 5 feet or deeper	☐	☐	☐	
5. Proper access/egress provided if 4 feet or deeper	☐	☐	☐	
6. Access/egress points within 25 feet of employees	☐	☐	☐	
7. Adequate barricades in place	☐	☐	☐	
8. Stop logs/warning system in place for vehicles	☐	☐	☐	
9. Spoil pile back at least 2 feet from excavation edge	☐	☐	☐	

WORK AREA DAILY INSPECTION CHECKLIST

Scaffolding	C	NC	NA	Location/Remarks
1. Competent person on-site	☐	☐	☐	
2. Scaffold tagged/inspected by competent person	☐	☐	☐	
3. Guardrails/toe boards on scaffold over 10 feet	☐	☐	☐	
4. Ladder provided for access to scaffold platform	☐	☐	☐	
5. Platform is fully decked and is of scaffold grade	☐	☐	☐	
6. Scaffold free of visible damage	☐	☐	☐	
7. All pins/braces in place and locked	☐	☐	☐	
8. Wheels locked on rolling scaffolds when in use	☐	☐	☐	
9. Scaffold erected on firm and substantial surface	☐	☐	☐	
Motor Vehicles/Earth Moving Equipment	**C**	**NC**	**NA**	**Location/Remarks**
1. Alarm/spotter if obstructed view to the rear	☐	☐	☐	
2. Seatbelts being worn	☐	☐	☐	
3. Bi-directional machines have operative horn	☐	☐	☐	
Crane and Rigging Safety	**C**	**NC**	**NA**	**Location/Remarks**
1. At least 10 foot clearance (electric lines 50 kV or less)	☐	☐	☐	
2. Outriggers properly placed and used for all lifts	☐	☐	☐	
3. Matting placed under each outrigger float	☐	☐	☐	
4. Documented inspections (annual/monthly/daily)	☐	☐	☐	
5. Load capacity chart posted in cab of crane	☐	☐	☐	
6. Proper barricade around swing radius of crane	☐	☐	☐	
7. Slings, hooks, and chokers are in good condition	☐	☐	☐	
8. Signal person used when crane is moved	☐	☐	☐	
9. Employees not under suspended loads	☐	☐	☐	
Aerial Lifts	**C**	**NC**	**NA**	**Location/Remarks**
1. Employees standing firmly on platform floor	☐	☐	☐	
2. Harnesses/lanyard worn in articulating lifts	☐	☐	☐	
3. Lanyard attached to anchorage point inside lift	☐	☐	☐	
4. At least 10 foot clearance (electric lines 50 kV or less)	☐	☐	☐	
Personal Protective Equipment	**C**	**NC**	**NA**	**Location/Remarks**
1. Eye protection worn at all times (100%)	☐	☐	☐	
2. Head protection worn at all times (100%)	☐	☐	☐	
3. Hearing protection worn in designated areas	☐	☐	☐	
4. Face shield and safety glasses worn when grinding	☐	☐	☐	
5. Respirators worn only with Safety Dept. approval	☐	☐	☐	
6. Suitable filter lenses worn when welding/cutting	☐	☐	☐	
7. Eye protection worn under welding hood	☐	☐	☐	
Hand and Power Tools	**C**	**NC**	**NA**	**Location/Remarks**
1. Proper use of tool	☐	☐	☐	
2. No visible physical damage to the tool	☐	☐	☐	
3. Cord not damaged and ground pin in place	☐	☐	☐	
4. GFCI protection used	☐	☐	☐	
5. Proper shields and guards in place	☐	☐	☐	
6. Certification for power actuated tool operation	☐	☐	☐	
7. Safety clips/pins in place on air hose connections	☐	☐	☐	
8. Proper PPE is being used	☐	☐	☐	

WORK AREA DAILY INSPECTION CHECKLIST

Manual Material Handling	C	NC	NA	Location/Remarks
1. Mechanical lifts used when practical	☐	☐	☐	
2. Material stage to minimize lifting and carrying	☐	☐	☐	
3. Rigging equipment in good condition	☐	☐	☐	
Fire Prevention and Protection	**C**	**NC**	**NA**	**Location/Remarks**
1. Work location within (100 feet) of fire extinguisher	☐	☐	☐	
2. Access to fire extinguisher is not blocked	☐	☐	☐	
3. Fire extinguishers fully charged and inspected	☐	☐	☐	
4. Heaters are a safe distance from combustibles	☐	☐	☐	
5. Employees observing "NO SMOKING" signs	☐	☐	☐	
6. Company hot work permit issued when required	☐	☐	☐	
Flammable Gas and Liquid	**C**	**NC**	**NA**	**Location/Remarks**
1. All containers clearly identified	☐	☐	☐	
2. Flammable liquids stored in approved containers	☐	☐	☐	
3. Proper storage practices for flammables observed	☐	☐	☐	
4. Oxygen cylinders 20 feet from fuel gas cylinders	☐	☐	☐	
5. Petroleum products 20 feet from compressed gases	☐	☐	☐	
6. Cylinders secured upright/capped when not in use	☐	☐	☐	
7. Cylinders are labeled as either "empty" or "full"	☐	☐	☐	
8. LP cylinders are not stored in buildings	☐	☐	☐	
Welding and Burning Operations	**C**	**NC**	**NA**	**Location/Remarks**
1. Hot work permit completed if required	☐	☐	☐	
2. Combustibles removed/covered by fire blankets	☐	☐	☐	
3. Fire watch present with extinguisher when required	☐	☐	☐	
4. Welding screen used when required	☐	☐	☐	
5. Welding goggles, gloves, and clothing being worn	☐	☐	☐	
6. Areas inspected for fire hazards after welding stops	☐	☐	☐	
7. Welding machines are grounded with GFCIs	☐	☐	☐	
Ladders	**C**	**NC**	**NA**	**Location/Remarks**
1. Ladders are in good condition	☐	☐	☐	
2. Safety shoes/cleats on bottom of ladders	☐	☐	☐	
3. Nonconductive ladders available around live wires	☐	☐	☐	
4. Ladders tied off at the top or otherwise secured	☐	☐	☐	
5. Side rails extend 36 inches above top landing	☐	☐	☐	
6. Step ladders are used in the fully open position	☐	☐	☐	

WORK AREA DAILY INSPECTION CHECKLIST

Work Zone	C	NC	NA	Location/Remarks
1. Signs in good condition/non-conflicting/clear view/proper position	☐	☐	☐	
2. Message sign - appropriate message/proper position	☐	☐	☐	
3. Arrow panel - auto dim/bulbs out/proper placement	☐	☐	☐	
4. TCDs in good condition/proper number and spacing/proper taper length	☐	☐	☐	
5. Flaggers certified/visible/properly positioned/ flagging correctly/advanced warning signs	☐	☐	☐	
6. Impact attenuator properly positioned/maintained	☐	☐	☐	
7. Pavement markings - remove/repair/need additional	☐	☐	☐	
8. Miscellaneous - adequate buffer/material and equipment properly stored/work area protected/ evidence of accidents	☐	☐	☐	
Environmental	**C**	**NC**	**NA**	**Location/Remarks**
Secondary containment systems				
1. Capable of containing 110 percent of volume of tank	☐	☐	☐	
2. Storm water properly disposed	☐	☐	☐	
Aboveground storage tanks				
1. Spill kit available	☐	☐	☐	
2. Fire extinguisher	☐	☐	☐	
3. More than 20 feet from buildings	☐	☐	☐	
Truck-mounted auxiliary tanks				
1. Spill-kit/extinguisher located on truck	☐	☐	☐	
Concrete and Masonry	**C**	**NC**	**NA**	**Location/Remarks**
1. Protruding rebar guarded or protected	☐	☐	☐	
2. PPE provided for employees	☐	☐	☐	
3. Powered/rotating trowels equipped with dead man switch	☐	☐	☐	
4. Compressed air concrete pumping hoses equipped with joint connectors	☐	☐	☐	
5. Nonconductive bull float handles used where electrical exposure might occur	☐	☐	☐	
6. Shoring erected per drawings and inspected before/during/after concrete placement	☐	☐	☐	
7. Formwork not removed until concrete has gained sufficient strength	☐	☐	☐	
8. Precast concrete sections adequately supported until permanent connections are made	☐	☐	☐	
9. Embedded lifting inserts capable of supporting 2 times maximum load	☐	☐	☐	
10. Lifting hardware capable of supporting 5 times maximum intended load	☐	☐	☐	
11. Restricted employee access under precast concrete members	☐	☐	☐	
12. Limited access zone established for masonry wall construction	☐	☐	☐	
13. Masonry walls over 8 foot adequately braced	☐	☐	☐	

PRE-PROJECT SUBSTANCE ABUSE TEST

Insert Subcontractor Letterhead/Logo here

Click here to type date

Subject: Click here to type Subcontractor's name
Click here to type project name
Pre-Project Assignment Substance Abuse Test

Attention: B&V/OCI Safety Manager

Dear Click here to type B&V/OCI Safety Manager's Name :

The following employee(s) has/have (choose one) undergone a Pre-Project Assignment Substance Abuse Test and has/have (choose one) been found in compliance/noncompliance (choose one) with the Substance Abuse Program policy:

Click here to type employee name(s)

This list will be updated as each transferred or newly hired employee is subjected to substance abuse testing.

Sincerely,

CLICK HERE TO TYPE SUBCONTRACTOR COMPANY NAME

Click here to type name of signer
Click here to type title of signer

VIOLATION NOTICE (CONTRACTOR)

To: _____ S/H Violation No. _____
Contractor

Site _____

Date _____ Time _____ ☐ a.m. ☐ p.m.

B&V Project _____ B&V File No. _____

From: Project Loss Control Office

TYPE OF VIOLATION (See reverse for definitions)

☐ Serious ☐ Nonserious ☐ Stop Work-Imminent Danger ☐ Stop Work-Noncompliance

Repeat Violation: ☐ Yes ☐ No

Location of Violation _____

Supervisor Responsible for Cited Area _____

VIOLATION DESCRIPTION

Abatement Period: _____ _____ ☐ a.m. ☐ p.m.
Date Time

STANDARD SOURCE

☐ OSHA ☐ NIOSH ☐ NFPA ☐ EPA

☐ NEC ☐ ANSI ☐ Other _____

Violation Notice Submitted _____ Signature _____
Date Site Safety Manager

ACTION TO CORRECT VIOLATION

Violation Corrected _____ Signature _____
Date Contractor

DANGER TAG

Figure 11

INCIDENT INVESTIGATION (PRELIMINARY ACCIDENT/ILLNESS)

To be completed by employee's immediate supervisor

Location of Incident (e.g., loading dock, P1G2) _____

Employee's Name _____ Division _____

Employee No. _____ Department No.: _____ Social Security No. _____

Job Title _____

Date of Accident/Illness _____ Time of Accident/Illness _____

Date Reported to Supervisor and Workers' Compensation Manager _____

Brief Incident Description

What was the employee doing at the time of injury?

Were there witnesses to the event? ☐ Yes ☐ No

If "Yes," who were the witnesses?

Has the employee received the required Safety and Health training? ☐ Yes ☐ No

What was the primary cause of the event? _____

Did the employee follow the proper procedures in reporting the event to the Workers' Compensation Manager and to the supervisor? ☐ Yes ☐ No

Conclusions/Recommendations to prevent a recurrence?

Corrective Action Taken

Completed by _____ Date _____

Copies must be given to the employee's Department Head and the Business Line Safety and Health Manager

INCIDENT INVESTIGATION (INJURY/ILLNESS)

Project No. _____ Company _____ Date _____
Project Name and Address _____
Work Area: ☐ Outdoors ☐ Indoors Location on Project _____
Person Injured or People Involved _____
Sex: ☐ Male ☐ Female Age _____
Incident Date _____ Incident Time: _____ ☐ AM ☐ PM
Injured Person's Home Address _____
Injured Person's Job Title _____
Task Performed When Injured _____
Shift Schedule _____
Employment Length in Trade: _____ Years _____ Months
Length of Service on Jobsite at Time of Incident: _____ Years _____ Months _____ Weeks _____ Days
Employment Category: ☐ Full-Time ☐ Part-Time ☐ Temporary ☐ Non-Employee _____

Brief description of incident:

Record any previous incidents similar to above (show date, name of injured/involved, and what happened):

Type of Incident:	**Type of Injury/Illness:**	**Action Taken/Outcome:**
☐ Struck Against	☐ Abrasion	☐ First Aid
☐ Struck By	☐ Burn	☐ Medical Treatment
☐ Caught In	☐ Bruise	☐ Lost Workdays (away from work)
☐ Fall	☐ Cut	☐ Restricted Duty Case
☐ Slip	☐ Dislocation	☐ Fatality
☐ Overexertion	☐ Fracture	☐ Other (describe):
☐ Inhalation	☐ Foreign Body	
☐ Arc Exposure	☐ Irritation	
☐ Vehicle	☐ Poisoning	
☐ Burn	☐ Sprain	
☐ Other (describe):	☐ Other (describe):	

Name and address of physician/hospital/clinic:

Describe the treatment rendered and who administered the treatment (sutures, prescriptions, work restrictions, etc.):

Incident during:
☐ Normal Work Period ☐ Rest Period ☐ Meal Period ☐ Overtime
☐ Entering ☐ Leaving ☐ Other _____

INCIDENT INVESTIGATION (INJURY/ILLNESS)

DETAILED INCIDENT DESCRIPTION (SEQUENCE OF EVENTS)

1. Describe what the employee did during the previous 24 hours.

2. Describe specifically what the employee did after reporting to the job until the time of the incident.

3. Describe exactly what he or she was doing when the incident occurred.

4. Describe specifically what the employee did immediately after the injury or illness.

Injured Employee's Supervisor's Name _____

Supervisor's Title _____

Describe where the supervisor was at time of incident:

Was there a written procedure for the job?	☐ Yes	☐ No
Was the procedure being followed?	☐ Yes	☐ No
Did the procedure Include safety rules?	☐ Yes	☐ No
Were the safety rules followed?	☐ Yes	☐ No
Was the employee trained concerning the safety rules and/or procedure?	☐ Yes	☐ No
If Yes, when? _____ By whom? _____		
Is there a record of the training?	☐ Yes	☐ No

Did the incident involve?

☐ Machines ☐ Equipment ☐ Processes ☐ Hazardous Materials _____

WERE THE APPLICABLE OSHA, ANSI, NFPA, AND OTHER PERTINENT STANDARDS COMPLIED WITH? ☐ Yes ☐ No

If No, describe: _____

Were there witnesses?	☐ Yes	☐ No
Name(s) _____		
Were witness statement(s) obtained and attached?	☐ Yes	☐ No
If No, why not? _____		

INCIDENT INVESTIGATION (INJURY/ILLNESS)

How much sleep did the individual or other crew members receive the night before the incident?	How much sleep does the individual or other crew members normally get each night?
☐ 8 hours or more ☐ 7 hours ☐ 6 hours ☐ Less than 6 (actual hours slept _____) If multiple people are involved, describe in narrative:	☐ 8 hours or more ☐ 7 hours ☐ 6 hours ☐ Less than 6 (actual hours normally slept _____) If multiple people are involved, describe in narrative:

BASIC INCIDENT CAUSES

Were there engineering, administrative (rules/procedures), education and training, and/or safety rules/procedures enforcement problems?

Direct cause(s):

Contributing factors:

Root cause (if you can still ask why, you have not determined the root cause):

RECOMMENDATIONS DEVELOPED BY INCIDENT REVIEW TEAM TO PREVENT RECURRENCE
(Review Team Charter for Members)

1.

2.

3.

Prepared By _____ Title _____ Date _____

Reviewed By _____ Title _____ Date _____

INCIDENT INVESTIGATION (NEAR MISS/PROPERTY DAMAGE)

Date _____
Project Name _____
Project No. _____
Site No. _____
Subcontractor Name _____
Subcontractor Field Supervisor _____

Name of Person Completing Form (Last, First, Middle Initial)	**Title of Person Completing Form**
Contact Phone Number(s)	**Witness** (Name and Phone No.)
Date and Time of Incident Date _____ Time _____ ☐ AM ☐ PM	**Near Miss Location** (building name, room number, stairwell). If incident occurred outside of the building, give location in reference to the nearest building.

Incident Description (Fully describe the protocol/procedures being followed, including all substances, equipment, and machinery being used that were related to the incident. Use additional sheets if necessary.)

Personal Protective Equipment (PPE) Used (if applicable)

Severity – Check the level of severity that you feel could occur if such an incident evolved. Example: HIGH = fatality, permanent disability, high-dollar loss; MEDIUM = temporary disability, moderate dollar loss; LOW = minor or no injury, minimal or no dollar loss. Consider factors such as physical injuries, damage to equipment/property, and environmental impacts.

☐ HIGH (3) ☐ MEDIUM (2) ☐ LOW (1)

Probability – Check the level of probability that you feel a person or property may be exposed to in a similar situation and the level of probability that required hazards or system failures may be present or likely. Example: HIGH = tasks occur frequently and by numerous individuals; MEDIUM = tasks occur on a regular basis by certain individuals; LOW = tasks occur infrequently by few individuals. Also consider criteria such as complexity of the system, latent and human factors, etc.

☐ HIGH (3) ☐ MEDIUM (2) ☐ LOW (1)

If the severity and probability add up to 4 or greater, the near miss or property damage event must be investigated by the Incident Review Team to determine the root cause.

Corrective Actions (Determine what should be done or has been done to prevent the recurrence of this incident, e.g., employee training, change of procedures, purchasing of equipment.)

Miscellaneous Information (Provide any other information or recommendations that you feel are pertinent to this incident).

FIRE EXTINGUISHER INSPECTION LOG

Project Name _____ Project No. _____

No.	Extinguisher Location	Dates												Removed from Service
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	
														☐
														☐
														☐
														☐
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														☐
														☐

JOB HAZARD ANALYSIS RISK ASSESSMENT

Job No. _____ Site ID _____ Hazard Assessment No. _____ Date _____

New/Revised _____ Supervisor _____ Analysis By _____

Project Manager _____ Revised By _____

Contractor _____ Approved By _____

Job Description _____

Risk Assessment Key					
Score	**1**	**2**	**3**	**4**	**5**
Severity	Negligible	Marginal	Serious	Critical	Catastrophic
Likelihood	Improbable	Remote	Occasional	Probable	Frequent

Sequence of Job	**Potential Hazards**	**Risk Assessment S x L = RR**			**Recommended Action, Procedure, and/or Equipment for Risk Mitigation**
		Severity	**Likeli-hood**	**Risk Rating**	

GFCI TESTING LOG

Project Name _____ Project No. _____

Location or Box Number	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.

CRANE MONTHLY INSPECTION

Site _____ B&V File No. _____
Contractor _____ Date _____
Equipment Type _____ Hours _____
Make/Model _____ Serial No. _____ Equipment No. _____
Boom Length _____ Jib Length _____
Wire Rope Size _____ Classification _____ No. of Parts _____
Other Comments _____

INSPECTION (Check if OK; detail exceptions below)

1. General

OK		OK	
_____	Capacity Chart	_____	Telescoping Length Indicator
_____	Controls Marked	_____	Load Indicator
_____	Operator's Manual	_____	Cab
_____	Proximity Signs	_____	Safety Glass
_____	Signal Charts	_____	Ladder/Handholds
_____	Signal Horn	_____	Levels
_____	Backup Alarms	_____	Exhaust Pipes
_____	Tailswing Protection	_____	Machinery Guards
_____	Fire Extinguisher, Type _____	_____	Fuel Filler (location)
_____	Boom Angle Indicator	_____	Appearance/Housekeeping
_____	Load Moment Device	_____	Instrument Check
_____	First Aid Kit		

2. Machinery

_____	Controls Operational	_____	Swing Mechanism/Circle
_____	Brakes, Clutches	_____	Swing Brakes
_____	Drum Guards	_____	Travel Mechanism/Chains
_____	Drum Rotation Indicator	_____	Travel Brakes
_____	Power Boom Hoist	_____	Hydraulic Leaks
_____	Boom Hoist Pawl	_____	Air Leaks
_____	Boom Hoist Kickout	_____	Pressure Settings
_____	Power Load Lowering	_____	Car Body/Carrier
_____	Brake Locks	_____	Revolving Frame
_____	Safety Brakes	_____	Gantry
_____	Check Valves	_____	Turntable Mounting

3. Attachments

_____	Boom	_____	Reeving
_____	Boom Stops	_____	Wire Ropes
_____	Point Sheaves	_____	Rope Sockets
_____	Sheave Guards	_____	Cable Clamps
_____	Jib	_____	Pendants
_____	Jib Stops	_____	Outriggers/Controls
_____	Hook and Block	_____	Tires/Tracks
_____	Jib Hook	_____	Counterweight

4. Exceptions _____

5. Date the last annual inspection was conducted _____ By whom _____

6. I certify that the manufacturer's recommended daily and monthly checks and inspections have been performed. _____ (initials)

Inspection Conducted By _____ Date _____
(Signature)

Figure 18

PROJECT COMBUSTIBLE AND FLAMMABLE MATERIAL STORAGE REQUIREMENTS

The following requirements shall be met for combustible and flammable material storage in the site fuel storage area.

STORAGE

All tanks shall be stored inside the concrete containment area.

- Individual portable tanks exceeding 1,100 gallons shall be not closer than 5 feet to any other tank(s).
- Each tank shall be plainly marked with the contractor's name and the contents of the tank.
- Grounding--Each tank shall have a connection to an earth ground (ground rod and wire connection).
- Bonding--Each tank shall be bonded to the container it is filling, either by a bonding cable attached to the tank and container, or by a self-bonding hose.
- Venting--Two types of vents are required:
  - Normal Vent--An open vent equal to or greater than the size of the fill or discharge openings. This vent is recommended to extend 12 feet above grade. The opening shall be protected with a weather hood that disperses the fumes away from the tank.
  - Emergency Relief Vent--A closed vent that releases with pressure (pop off valve). These types of vents can be obtained from most tank suppliers.
- All tanks mounted on stands shall be tied down.
- All gravity feed tanks shall be equipped with an automatic shutoff at the tank side of the discharge hose and at the handle.
- All tanks shall be blocked up off the ground a minimum of 6 inches.
- All tanks shall have an outside corrosion coating.

FIRE PROTECTION

- Contractors shall supply at least one portable fire extinguisher having a rating of not less than 20 B units. The fire extinguisher shall be post mounted directly in front of the contractor's tanks in the area designated for fire extinguishers.
- Contractors shall be responsible for keeping their storage area free of weeds, debris, and other combustible material.
- No smoking or open flames shall be allowed in the fuel storage area.
- All refueling of equipment shall be done with the engines off.

SPILLS

- All spills shall be reported to Black & Veatch.

The above requirements shall in no way eliminate any requirements for combustible and flammable material storage set forth in the OSHA 29 CFR 1926 Construction Standards.

CHEMICAL STORAGE AREA INSPECTION LOG

KEEP USE LIMITED TO REGULATORY REQUIREMENTS.

Date _____

Time _____

Inspector _____

Storage Area	Observation	Date and Nature of Repairs

The containers of chemicals must be visually inspected at least weekly for leaking and deteriorated containers.

PROJECT SCAFFOLD TAGS

GREEN

YELLOW

RED

Figure 21

CONFINED SPACE ENTRY PERMIT

Project _____ Site _____

Date/Time of Entry _____ Permit Expires _____

Location of Permit Space _____ Contractor _____

Work Description/Purpose of Entry _____

VERIFICATION

	Date	Entry Supervisor's Initials
Lockout (electrical, agitators, valves		
Purged, Cleaned, or Drained		
Employees Briefed on Safety Procedures		

HAZARDS	EQUIPMENT	CONTROLS
☐ Oxygen deficiency (< 19.5%)	☐ Respirator-dust/chemical	☐ Empty
☐ Oxygen enrichment (> 23.5%)	☐ Air supplied respirator	☐ Water washed
☐ Combustible atmosphere (> 10% LEL)	☐ SCBA/SAR with escape pack	☐ Chemically cleaned
☐ Toxic gases, vapors, liquids, or solids (> PEL)	☐ Full body harness	☐ Blinded or blanked
☐ Mechanical hazards	☐ Impervious suit	☐ Work permits
☐ Electrical hazards	☐ Impervious gloves	☐ Hazardous energy locked out
☐ Chemical hazards	☐ Disposable suit	☐ Continuous forced air ventilation
☐ Temperature extremes	☐ Hearing protection	☐ Pre-entry briefing on specific hazards and controls
☐ Engulfment	☐ Goggles/face shield	☐ Other
☐ Non-isolated engulfment hazards	☐ Communication means	☐ Other
☐ Entrapment	☐ SDS attached	☐ Other
☐ Other	☐ Early warning systems	
☐ Other	☐ Other	

OTHER REQUIREMENTS

CONFINED SPACE ENTRY PERMIT

ATMOSPHERE CHECK FOR OXYGEN, COMBUSTIBLES, AND GAS/VAPOR

Measurement Instrument Used _____

Atmosphere Checked By _____

**Calibrated in accordance with manufacturer recommendations.*

	Time / Level	Time / Level	Time / Level	Time / Level
Oxygen (19.5-23.5%)	/	/	/	/
LEL (< 10%)	/	/	/	/
CO (< 35 ppm)	/	/	/	/
H_2S (< 10 ppm)	/	/	/	/

* * The competent person is responsible for determining whether additional atmospheric testing is required based on hazardous gas potential within/near the confined space (e.g., H_2S, SO_2, NO_X).

Rescue and Emergency Service	Name/Number	Means of summoning services
Fire		
EMS		
Other		

The following authorizing signatures indicate the above requirements have been met:

Competent Person _____ Date _____

Entry Supervisor _____ Date _____

Attendant _____ Date _____

Entrants (please print name)	Initial	Time In	Time Out	Entrants (please print name)	Initial	Time In	Time Out

EXCAVATION AND TRENCH PERMIT

Site _____ Contractor _____

Project _____ Begin Date _____ End Date _____

Locate Ticket No. _____ (Permit is good for a maximum of 14 days from the date of the locate ticket.)

The completed permit is to be kept in the site binder.

1. Location and Description of Work:

2. What equipment will be used to complete the work?

3. Size of Trench or Excavation: _____ feet long _____ feet wide _____ feet deep
   If depth is greater than 5 feet, complete Sections 9 and 10.

4. Lines in the Vicinity of Work: ☐ Yes ☐ No (If yes, complete Section 11 and attach to this document.)
   Electrical _____ Communication _____ Water _____
   Sewer _____ Gas _____ Drain _____
   Other (specify) _____

5. Are any of the lines in the vicinity private? ☐ Yes ☐ No If yes, what type? _____
   If private utility lines are present, then conduct private locates. Who will be performing private locates? _____

6. Other Known Obstructions: ☐ Yes ☐ No
   Footings _____ Pilings _____ Concrete Encasements _____
   Other (specify) _____

7. Have available drawings been used to identify existing utilities and obstructions? ☐ Yes ☐ No
   If no, why not? _____

8. What precautions will be taken to avoid the utilities identified?
   De-energize Lines _____ Ground Tools _____ Insulate Operator _____ Hand Excavate _____

9. What type of soil? Type A _____ Type B _____ Type C _____ Solid Rock _____
   Test used to determine class? _____

10. What type of protective system will be used?
    _____ Sloping (check one): ☐ Type A 3/4:1 (53 degrees) ☐ Type B 1:1 (45 degrees) ☐ Type C 1.5:1 (34 degrees)
    _____ Benching (check one): ☐ Type A 3/4:1 (53 degrees) ☐ Type B 1:1 (45 degrees)
    _____ Shoring, Type: _____
    _____ Shield, Type: _____

11. Utility Avoidance Plan (To be completed on site plan drawing, if available. Include the following.):
    _____ Path of proposed excavation
    _____ Pictures of marked utilities
    _____ Location of all marked utilities, both public and private, on the site drawing
    _____ Location of all required potholes (all utility crossings are to be potholed)
    Location of all required hand digging (hand digging is required within 18 inches of all marked utilities)

Black & Veatch Signature _____ Date _____

Supervisor/Contractor Signature _____ Date _____

WELDING, CUTTING, AND HEATING PERMIT

Site _____ Contractor _____

Person Requesting Permit _____

Location of Permit _____

Duration of Permit Date _____ Time _____ Thru/Date _____ Time _____

Nature of Work _____

The person requesting the permit and a person authorized to issue a permit shall check the following items and resolve any problems prior to issuing the permit.

Yes	No	N/A	
_____	_____	_____	General condition of area housekeeping satisfactory.
_____	_____	_____	Necessary equipment tagged out of service according to the plant tagging procedures.
_____	_____	_____	Fire protection system in service.
_____	_____	_____	All flammable and combustible materials removed.
_____	_____	_____	Flammable and combustible liquid storage cabinets and containers removed or covered.
_____	_____	_____	All coal and coal dust swept up or vacuumed away. The area is wetted down after it is cleaned.
_____	_____	_____	Area checked for combustible vapors _____%.
_____	_____	_____	Any piping or vessels are purged or inerted before welding, cutting, or heating (if they are used to transport or store flammables or combustibles).
_____	_____	_____	Opening in floors or walls are covered to contain sparks and hot slag.
_____	_____	_____	Fire watch provided and equipped with a fire extinguisher and the location of the nearest fire cabinet identified.
_____	_____	_____	Fire watch instructed to stay in the area long enough after the work is completed to ensure there is no fire hazard.
_____	_____	_____	Work area barricaded or roped off if necessary.
_____	_____	_____	The communications in the area has been checked (phones, radios).
_____	_____	_____	The watch engineer or appropriate operations area supervision has been notified.
_____	_____	_____	Fire watch provided for 30 minutes following work.

_____ _____

Signature of Authorizing Person — Date

_____ _____

Signature of Person Requesting Permit — Date

_____ _____

Signature of Project Representative (Required in operating plant) — Date

STEEL ERECTION CHECKLIST

Job Name _____ Project Engineer _____
Job No. _____ Fabricator _____
Erector Name _____ Qualified Riggers _____
Anchor Bolt Contractor _____ Crane Operators _____

A. SCOPE OF WORK

Pre-engineered metal building	☐	sq. ft.	_____	tons	_____
Structural steel	☐	sq. ft.	_____	tons	_____
Roofing	☐	sq. ft.	_____	tons	_____
Grating	☐	sq. ft.	_____	tons	_____
Decking	☐	sq. ft.	_____	tons	_____
Miscellaneous steel	☐	sq. ft.	_____	tons	_____
General miscellaneous	☐	sq. ft.	_____	tons	_____

General description of work: _____

B. FOOTINGS, PIERS, WALLS, AND ANCHOR BOLTS

1. Has concrete reached 75 percent of sufficient strength?	☐ Yes	☐ No	
2. Proof of strength:			
a. ASTM test method results	☐ Yes		or Attach
b. Engineer verification	☐ Yes		
3. Were anchor bolts repaired, replaced, or modified?	☐ Yes	☐ No	
4. Was erector notified in writing?	☐ Yes		or Attach

C. NOTIFICATION OF COMMENCEMENT OF STEEL ERECTION

1. Was written notification given to erector?	☐ Yes		or Attach

D. SITE LAYOUT

1. Has controlling contractor provided adequate access to the site?	☐ Yes	☐ No
2. Is lay-down area firm, properly graded, well drained, and accessible?	☐ Yes	☐ No

E. SEQUENCE OF ERECTION ACTIVITY

1. Give a general sequence of erection activities: _____
2. Give material delivery date(s) _____
3. How will activities be coordinated with other contractors/trades? _____

F. CRANES

1. Crane type(s) _____
2. Crane brand(s) _____
3. Crane capabilities _____
4. How is the site prepared for the crane(s)? _____
5. How many different locations will crane have and where are they? _____
6. What is the path for overhead loads? _____
7. How will employees be notified of overhead loads? _____
8. Are there any critical lifts? Critical lifts are defined as (1) any lift that utilizes more than one crane or hoisting device, (2) any lift that is over 20 tons, (3) any lift involving a crane suspended work platform, (4) any lift over critical operating and/or process equipment, (5) any lift that exceeds 75 percent of the crane's capacity or stated load chart at any point during the lift, (6) any lift that the crane operator believes should be critical. If a lift exceeds 90 percent of the crane's load chart, the lift will need to be reconfigured to move below 90 percent or a different crane will need to be used.
   ☐ Yes ☐ No
   How many? _____
9. Describe critical lifts: _____
10. Are lift plans attached for all critical lifts? ☐ Yes

STEEL ERECTION ACTIVITIES/PROCEDURES

(Give a description of the following items and how they will be performed.)

1. Temporary bracing/guying: _____
2. Repair, replacement, or modification of anchor bolts: _____
3. Columns/beams (joists or purlins): _____
4. Connections: _____
5. Decking: _____

6. Roofing: _____

_____

_____

7. Siding: _____

_____

_____

8. Steel grating: _____

_____

_____

9. Handrail or miscellaneous iron: _____

_____

_____

G. FALL PROTECTION

(Please identify the fall protection procedures for the following tasks):

1. Erection of vertical structural members
   - ☐ JLG Lift/Tie-Off
   - ☐ Scissor Lift/Guardrails
   - ☐ Vertical Lifeline/Harness and Lanyard
   - ☐ Retractable Lanyard/Harness
   - ☐ Other--Explain: _____
2. Erection of horizontal structural members
   - ☐ JLG Lift/Tie-Off
   - ☐ Scissor Lift/Guardrails
   - ☐ Horizontal Lifeline/Harness and Lanyard
   - ☐ Retractable Lanyard/Harness
   - ☐ Beam Clamps/Harness and Lanyards
   - ☐ Other--Explain: _____
3. Installation of siding and associated insulation
   - ☐ JLG Lift/Tie-Off
   - ☐ Scissor Lift/Guardrails
   - ☐ Rolling Scaffolding/Guardrails
   - ☐ Man-Basket/Guardrails/Tie-Off
   - ☐ Swing Stage Scaffolding/Guardrails/Tie-Off
   - ☐ Other--Explain: _____
4. Installation of roofing and associated insulation
   - ☐ Guardrail System
   - ☐ Personal Fall Arrest System
   - ☐ Personal Fall Arrest System/Warning Line
   - ☐ Other--Explain: _____
5. Installation of decking
   - ☐ Guardrail System
   - ☐ Personal Fall Arrest System
   - ☐ Personal Fall Arrest System/Warning Line
   - ☐ Other--Explain: _____
6. Unprotected sides/edges
   - ☐ Guardrail System
   - ☐ Personal Fall Arrest System
7. Leading edges
   - ☐ Guardrail System
   - ☐ Personal Fall Arrest System

STEEL ERECTION CHECKLIST

8. Holes ☐ Covers ☐ Guardrails ☐ Personal Fall Arrest System
9. Wall opening ☐ Guardrails ☐ Personal Fall Arrest System
10. Has fall protection training been documented? ☐ Yes ☐ No (Attach)
11. Is a competent person on-site at all times? ☐ Yes ☐ No
12. Were fall protection systems designed by a qualified person? ☐ Yes ☐ No

H. FALLING OBJECT PROTECTION

1. Method for securing loose items aloft: _____
2. Are all personnel wearing hard hats? ☐ Yes ☐ No
3. Are erection areas properly barricaded? ☐ Yes ☐ No

I. HAZARDOUS NONROUTINE TASKS

1. Are job safety analyses performed on all hazardous nonroutine tasks? ☐ Yes ☐ No
2. List tasks below and attach JHAs:

_____ _____ _____
_____ _____ _____
_____ _____ _____
_____ _____ _____

J. TRAINING CERTIFICATION

1. Are all personnel properly trained for performing steel erection activities? ☐ Yes ☐ No
2. Are all personnel properly trained for use of fall protection systems? ☐ Yes ☐ No
3. Attach documentation of training.

K. LIST OF QUALIFIED AND COMPETENT PERSONS

1. Qualified person for site-specific erection plan _____
2. Qualified person for all protection system design _____
3. Qualified rigger _____
4. Crane operator _____
5. Crane inspector _____
6. Fall protection competent person _____

L. EMERGENCY RESCUE PROCEDURES

☐ Self-Rescue ☐ Emergency Response Team ☐ Man-Basket
☐ Stair Tower ☐ First Aid Trained Personnel ☐ Hoists
☐ Aerial Lifts ☐ Other

M. RIGGING

1. Attach rigging inspection program (slings, chain-falls, come-alongs, etc.).
2. Attach certifications for all lifting devices (spreader beams, MLRP rigging, etc.).

CONCRETE ANCHOR BOLT RELEASE

Project Name _____

Black & Veatch Project No. _____

Released To _____ Black & Veatch File No. _____

FOOTINGS, PIERS, WALLS, AND ANCHOR BOLTS

Drawing No. and Revision _____

_____

Column/Location to be Load Bearing _____

_____

Elevation as Required _____

Date of Pour _____

Pour No. _____

1. Design strength is _____ psi
   (75 percent of design strength MUST be achieved prior to release for steel erection.)

2. Compressive test results on _____ Day Break Test Results _____ psi
   (Attach compressive test results)

Were anchor bolts repaired, replaced, or modified? ☐ Yes ☐ No
(If YES, attach copy of standard engineered repair or NCR.)

APPROVALS

B&V Site Quality Manager _____ Date _____

B&V Project Field Manager _____ Date _____

Distribution:
Project Field Manager
Site Safety Manager
Subcontractor or B&V Structural Crew
File

CONCRETE ANCHOR BOLT RELEASE

Project Name [1] _____

Black & Veatch Project No. [2] _____

Released To [3] _____ Black & Veatch File No. [4] _____

FOOTINGS, PIERS, WALLS, AND ANCHOR BOLTS

Drawing No. and Revision [5] _____

_____

Column/Location to be Load Bearing [6] _____

_____

Elevation as Required [7] _____

Date of Pour [8] _____

Pour No. [9] _____

1. Design strength is [10] _____ psi
   (75 percent of design strength MUST be achieved prior to release for steel erection.)

2. Compressive test results on [11] _____ Day Break Test Results [12] _____ psi
   (Attach compressive test results)

Were anchor bolts repaired, replaced, or modified? ☐ Yes ☐ No [13]
(If YES, attach copy of standard engineered repair or NCR.)

APPROVALS

B&V Site Quality Manager [14] _____ Date [15] _____

B&V Project Field Manager [16] _____ Date [17] _____

Distribution:
Project Field Manager [18]
Site Safety Manager
Subcontractor or B&V Structural Crew
File

CONCRETE ANCHOR BOLT RELEASE

INSTRUCTIONS

This form is to be completed and issued to the steel erection contractor, or the Black & Veatch structural crew in the event of self-performed work, prior to the commencement of steel erection. A separate form is to be used to release areas poured on different dates, and copies of the compressive break test are to be attached to the form.

1. Type in the Black & Veatch project name (e.g., Culley Station Unit 3 SCR Project).
2. Type in the Black & Veatch project number (e.g., 164779).
3. Enter name of Contractor.
4. Project Field Manager to assign Black & Veatch file number.
5. Type or write in all drawing numbers and revisions affected by this release.
6. Type or write in all column locations affected by this release (e.g., B1, B2, or B3).
7. Type in elevation of foundation or support locations.
8. Enter date concrete was poured at affected locations.
9. Enter number of pour.
10. Enter design strength for concrete tests for affected locations.
11. Enter number of days after pour; compressive test results are used for this release.
12. Enter compressive test results in psi.
13. Check YES or NO. If NO is checked, no further action is required. If YES is checked, a copy of the standard engineered repair or NCR must be attached.
14. Black & Veatch Site Quality Manager is required to verify drawing numbers and revisions, column locations, date of pour, compressive test results, and design strength before signing release. In the absence of a Site Quality Manager, it is the responsibility of the Project Field Manager to assign a competent person to perform this function.
15. Black & Veatch Site Quality Manager is required to verify drawing numbers and revisions, column locations, date of pour, compressive test results, and design strength before dating release. In the absence of a Site Quality Manager, it is the responsibility of the Project Field Manager to assign a competent person to perform this function.
16. Black & Veatch Project Field Manager is responsible for verification of drawing numbers and revisions, column locations, date of pour, compressive test results, and design strength before signing release.
17. Black & Veatch Project Field Manager is responsible for verification of drawing numbers and revisions, column locations, date of pour, compressive test results, and design strength before dating release.
18. Enter distribution as required. (As a minimum: the subcontractor or Black & Veatch structural crew, project files, Project Field Manager, and the Site Safety Manager.)

PERIMETER GUARDRAIL TURNOVER

INSPECTION OF GUARDRAIL SYSTEM

ATTENDEES	
NAME	**ORGANIZATION**

Date _____

LIST OF DEFICIENCIES (specific area of inspection; e.g., unit, building)

DEFICIENCY (LOCATION AND BRIEF DESCRIPTION)	**RESPONSIBLE PARTY**	**DATE TO BE COMPLETED**	**SIGN-OFF** (BOTH PARTIES)

LOSS CONTROL DEPARTMENT

OCCUPATIONAL SAFETY AND HEALTH REGULATIONS

INTRODUCTION

The following Project Loss Control Program rules are adopted for the protection of persons involved with the construction of this project. These rules apply to management, Contractor personnel, and visitors while on the jobsite. These rules are general in nature and are not to be considered all-inclusive; nor do they relieve Client, Black & Veatch, Contractors, or their employees from applicable Occupational Safety and Health Regulations promulgated by governmental authorities.

GENERAL SAFETY RULES

Mobile Devices

Personal cell/mobile phones/mobile device use is prohibited during work hours on-site. Personal cell/mobile phones/mobile devices may be kept in designated break areas for use during lunches and breaks at office trailers and designated break areas. Contractor supervisors may carry and utilize company phones if required to perform their job duties.

Housekeeping

1. Leads, hoses, and extension cords shall be hung up (approximately 7 feet) with a nonconductive material, off all floors, stairways, and walkways in a manner such that they are not in contact with the building steel structure. Leads, hoses, and cords are to be removed from the work area when the work is completed or when they are no longer intended to be used. Lead, hose, and cord "roll-ups" will be required if an excessive amount of equipment accumulates in a work area creating housekeeping or trip hazards.

2. Trash such as drinking cups, cans, and scraps from lunch are not to be thrown down, but should be disposed of properly in marked containers.

3. Available material, equipment, concrete forms, pipe, etc., are to be orderly and stacked out of walkways and from in front of doors, stairways, and ladders.

4. Oil, grease, and other such liquid spills shall be cleaned up at the time of the spill and are not to be left unattended.

5. Each craft is responsible for housekeeping in its respective work areas.

6. Where such items as protruding rebar and anchor bolts create an impalement or tripping hazard, they shall be properly protected and conspicuously marked.

7. Trash barrels and 55 gallon drums shall not be hoisted by holes cut in the sides; adequate means of support shall be used.

Personal Protective Equipment

1. Eye Protection--ANSI approved safety glasses with side shields shall be worn at all times except while employees are in vehicles with enclosed cabs, or where additional eye protection is required.

   Welders are required to wear safety glasses under their welding hoods unless approval is obtained from the Project ESH&S Manager.

   Safety goggles shall be worn when possible liquid chemical eye hazards are present.

   Full face shields shall be worn while employees are grinding, chipping concrete, or when possible eye and face hazards are present. Safety glasses are required to be worn under the face shields.

2. Hearing protection shall be worn when employees are working in excessively noisy areas.

3. Respiratory protection shall be worn when employees are exposed to hazardous levels of gas, vapor, or particulate contaminants in the atmosphere.

4. Hard hats shall be worn at all times in the construction area. Specific Contractor hard hats are to be colored the same for identification purposes. Contractors shall submit color request for approval prior to mobilization to minimize duplication with other Contractors. Hard hats shall be labeled with employee name or employee number to the satisfaction of the Project ESH&S Manager. "Cowboy" style hard hats are not permitted on the project. "Soft Cap" welding is not permitted unless permission is obtained from Black & Veatch.

5. Work Boots--In the construction area, good leather ANSI approved safety-toe (steel or composite-toe) work boots with a hard sole and 6 inch tops that support the ankle are required.

   Tennis shoes, sandals, "flip-flops," and other open-toed footwear shall not be allowed on the jobsite.

6. Shirts and Pants--Shirts covering the full trunk and shoulders are required. Tank tops or midriff shirts are not allowed. The shirtsleeve shall be a minimum of 4 inches (10 cm) in length.

   Cutoff jeans or shorts shall not be worn on the jobsite. Pants shall cover the top of the boot when a person is standing.

   Shirts or other items of clothing shall not have offensive language or images.

Personal Protective Equipment (Continued)

All employees exposed to vehicular traffic or mobile equipment, including surveyors, inspectors, spotters, signalmen, flagmen, and other construction trades, must wear high visibility fluorescent red, lime green, or orange in accordance with ANSI/ISEA 107-2010.

7. Seat belts shall be worn by all personnel riding in vehicles, as well as heavy equipment operators and forklift operators. Those observed not wearing seat belts may have their driving privilege revoked. Passengers riding in school buses not equipped with seat belts are permitted to do so.

8. No riders other than the operator shall be allowed on any piece of mobile equipment unless designed for that purpose.

9. Personnel are not allowed to ride in the back of pick-up trucks, on flat-bed trailers, or on any piece of mobile equipment not designed for that purpose.

10. Hand protection is required to be worn by all employees in construction areas. The minimum general use glove must meet ANSI/ISEA 105-2016 Cut Level 2 or EN 388-2016 Level B. Employees engaged in wire or coaxial cable cutting, stripping, or grounding installation must wear gloves meeting ANSI/ISEA 105-2016 Cut Level 4 or EN 388-2016 Level D. Higher level cut-resistant gloves must be worn when employees are handling sharp material. Specialty gloves must be selected based on hazard assessment.

Fall Protection

1. Fall protection is required 100 percent of the time when employees are exposed to a fall in excess of 6 feet from where their feet are located or when required by additional rules. One hundred percent fall protection is required whether the employee is climbing, traveling from Point A to Point B, connecting structural steel, or erecting scaffolds or other temporary platforms. No employee or work operation is exempt from the 100 percent fall protection requirement.

2. When not protected by any other means of fall protection, such as safety nets or scaffold with proper guardrails, employees shall use full body harnesses, shock absorbing lanyards with double locking snap hooks, and an adequate anchorage (fall arrest equipment). To achieve 100 percent fall protection, employees may need to use a double lanyard system and/or vertical or horizontal lifelines, retractable lifelines, or other such approved devices.

3. Fall arrest equipment shall be rigged so that employees can neither free fall more than 6 feet nor contact any lower object. Anchorage points for fall arrest equipment shall be capable of supporting 5,000 pounds per employee and be located above the employee's body harness attachment point where practicable. Anchorage points shall be independent of any anchorage being used to support or suspend scaffolds or other platforms. Rigging shall not be used for anchorage devices or be included within a Personal Fall Arrest System.

4. When vertical lifelines are used, each employee shall be protected by a separate lifeline. The lifeline shall be properly weighted at the bottom and terminated to preclude a device such as a rope grab from falling off the line.

5. Horizontal lifelines should be limited to two persons at one time between supports. Horizontal lifelines shall be designed, installed, and used under the supervision of a qualified person. The horizontal lifeline shall be designed to maintain a safety factor of at least two. Horizontal lifelines shall be designed by a qualified person (Professional Engineer) that shall provide design and use limitations. The lifeline shall be used in accordance with the design or manufacturer's requirement.

6. Before each use, employees shall visually inspect all fall arrest equipment for cuts, cracks, tears or abrasions, undue stretching, overall deterioration, mildew, operational defects, heat damage, or acid or other corrosion. Equipment showing any defect shall be withdrawn from service and measures shall be taken to prevent the equipment from being used.

7. All fall arrest equipment subjected to impacts caused by a free fall or by testing shall be removed from service and destroyed or managed so that it cannot be utilized.

8. Employees shall store all fall arrest equipment in a cool dry place not subjected to direct sunlight. Storage areas shall be free from chemicals, potential sharp edges, etc. This includes temporary storage such as lunch and breaks.

9. Employees shall not use fall arrest equipment until they have been properly trained in its use. Certification of this training shall be available to the Project ESH&S Manager for review.

10. Foremen shall ensure that fall protection is available and used as required for all employees for whom they are responsible.

11. Fall arrest equipment shall not be used for any other purpose, such as tow ropes or hoist lines.

12. Proper guardrails shall be installed on open sides of all walkways and runways where the fall distance exceeds 6 feet. An assessment shall be made to determine if a guardrail is needed at a distance less than 6 feet.

13. Proper guardrails shall be installed on all open sided floors where the fall distance exceeds 6 feet.

Fall Protection (Continued)

14. All floor openings or floor holes shall be protected by guardrails or hole covers. If hole covers are used, they shall be strong enough to support the maximum intended load, secured against displacement, and properly labeled. If the cover is subject to vehicular traffic, it shall be capable of supporting at least two times the axle load of the largest vehicle expected to cross over it. On projects where multiple languages are spoken, symbols may be used to identify floor openings.

15. When an employee is operating a scissor lift work platform, the lift shall have guardrails on all open sides and the door access chains or rails in place. If the lift has designed anchorage points, the employee(s) shall utilize a Personal Fall Arrest System.

16. Employees operating aerial lifts shall wear a body harness and lanyard attached to the aerial lift. Employees shall not attach the lanyard to an independent structure.

17. Employees riding in a crane-suspended work platform shall wear a body harness and lanyard attached to the grab rail of the platform or designed anchorage point.

18. Employees working on wall forms or rebar shall wear a body harness and lanyard, in addition to a positioning device, when exposed to a fall in excess of 6 feet. Positioning devices shall be rigged to prevent a free fall greater than 24 inches.

19. Stairs, ladders, or ramps shall be provided for all accessways where there is a change in elevation greater than 19 inches.

20. When guardrails are used for fall protection, they shall consist of a top rail, intermediate rail, and toeboard. The top rail shall have a vertical height of 42 inches plus or minus 3 inches, the midrail shall be at 21 inches, and the toeboard must be at least 4 inches high. Guardrail systems shall be constructed so that there are no openings greater than 19 inches. When wood railings are used, the post shall be of at least 2 inch by 4 inch stock spaced not to exceed 8 feet, the top rail shall be of at least 2 inch by 4 inch stock, and the intermediate rail shall be of at least 1 inch by 6 inch stock. If pipe is used, it shall be at least 1-1/2 inch nominal diameter. If structural steel is used, it shall be 2 inch by 2 inch by 3/8 inch angles or equivalent. If wire rope is used for railings, it shall have a diameter of at least 1/2 inch and be stretched taut to allow no more than a 3 inch deflection. Guardrail systems shall be capable of supporting a force of at least 200 pounds applied within 2 inches of the top edge.

21. Guardrail systems shall be constructed so that when a 200 pound force is applied in a downward direction, it will not deflect to a height less than 39 inches.

22. If wire rope is used for top rails, it shall be flagged at no more than 6 foot intervals with high visibility material.

23. Manila or synthetic rope shall not be used as guardrails.

24. Employees shall not stand or sit on guardrails.

25. Contractor shall comply with 29 CFR 1926.500-.503 Subpart M requirements.

Compressed Gases

1. Care shall be exercised in handling all compressed gas cylinders. They shall not be dropped, jarred, or exposed to temperature extremes.

2. Cylinders shall have the valve cap or valve protection device in place at all times, except when in actual use or connected to a welding set.

3. Cylinders shall not be rolled and shall not be lifted by the valve or valve cap; a suitable cradle or other device shall be used.

4. Cylinder contents shall be properly identified according to OSHA, DOT, and Compressed Gas Association guidelines.

5. Cylinders not having fixed handwheels shall have keys, handles, or nonadjustable wrenches on the valve stems while the cylinders are in service.

6. Compressed gas cylinders, whether full or empty, shall be stored and transported in an upright position and chained or otherwise secured so they cannot fall or be upset.

7. Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease) a minimum distance of 20 feet or by a 5 foot high noncombustible barrier with at least a 30 minute fire rating.

8. Cylinders shall not be placed where they might become part of an electric circuit or within 5 feet of an electrical outlet.

9. Employees shall never force connections that do not fit, nor shall they tamper with the safety relief devices of cylinder valves.

10. Before the regulator is removed from a cylinder, the valve shall be closed and all pressure released from the regulator.

11. A leaking cylinder shall not be used. Such cylinders shall be taken outdoors away from sources of ignition. The supervisor shall be notified.

12. A flame shall never be used to detect gas leaks.

13. The recessed top of cylinders shall not be used as a place for tools.

Compressed Gases (Continued)

14. Oxygen cylinders:

    a. Oil, grease, or similar materials shall not be allowed to come in contact with any valve, fitting, regulator, or gauge of oxygen cylinders.

    b. Oxygen cylinders shall never be used as a substitute for compressed air.

    c. When in use, the valve should be opened fully in order to prevent leakage around the valve stem.

15. Acetylene cylinders:

    a. Acetylene cylinders shall be protected from sparks, flames, and contact with energized electrical equipment.

    b. Acetylene cylinders shall not be opened more than 1-1/2 turns of the spindle and preferably no more than 3/4 of a turn.

    c. Employees shall not use acetylene in a free state at pressures higher than 15 psi.

    d. Flashback arrestors are required on all oxygen/acetylene fuel burning rigs. Arrestors are to be placed between the regulator and the hose connections and the torch-hose connections (if not already built into the torch assembly).

Welding and Cutting--General

1. Before performing welding, cutting, grinding, or any other "hot work" in a hazardous area, employees shall obtain a Welding, Cutting, and Heating Permit (Figure 24) from their Contractor. Hazardous areas are those areas where there is the presence or the potential of the presence of flammable or combustible materials, liquids, gases, vapors, or dusts.

2. Welding and cutting shall be performed only by experienced and properly trained persons. Before welding or cutting is started, the area shall be inspected for potential fire hazards.

3. When welding or cutting in elevated positions, employees shall take precautions to prevent sparks or hot metal from falling onto people or flammable material below.

4. Suitable fire extinguishing equipment shall be immediately available at all locations where welding and cutting equipment is used.

5. Matches shall not be carried by welders or their helpers when they are engaged in welding or cutting operations.

6. A fire watch shall be maintained whenever welding or cutting is performed in locations where combustible materials present a fire hazard. A fire check shall be made of the area not more than 1/2 hour after completion of welding.

7. Where combustible materials such as paper clippings, coal, or wood shavings are present, the floor shall be swept clean for a radius of 35 feet before welding is performed. Combustible floors shall be kept wet or protected by fire-resistant shields. Where floors have been wetted down, personnel operating arc welding or cutting equipment shall be protected from possible shock.

8. To protect his/her eyes, face, and body during welding, cutting, and grinding operations, the employee shall wear safety glasses, appropriate hearing protection, an approved helmet with proper fitted welding helmet or face shield, protective gloves, and protective clothing. Welding leathers shall be worn during all arc gouging operations and when oxygen/acetylene or plasma cutting overhead. Helpers or attendants shall wear proper eye protection and protective clothing as required. Other employees shall not observe welding operations unless approved eye protection is used.

9. Proper eye protection shall be worn to guard against flying particles when the helmet or goggles are raised.

10. Machinery, tanks, equipment, shafts, or pipes that could contain explosive or highly flammable materials shall be thoroughly cleaned and decontaminated before heat is applied.

11. In dusty or gaseous spaces where there is a possibility of an explosion, welding or cutting equipment shall not be used until the space is adequately ventilated.

12. Welders shall place welding cable, hoses, and other equipment so that it is clear of passageways, ladders, and stairways.

13. Where the work permits, the welder should be enclosed in an individual booth or shall be enclosed with noncombustible screens. Workers or other persons adjacent to the welding areas shall be protected from rays by shields or shall be required to wear appropriate eye and face protection.

14. After welding or cutting operations are completed, the welder shall mark the hot metal or provide other means of warning other workers.

Welding and Cutting--General

15. Potentially hazardous materials used in fluxes, coatings, and covering, and filler metals used in welding and cutting are released to the atmosphere during welding or cutting operations. While welding or cutting, employees shall use adequate ventilation or approved respiratory protection equipment. Employees shall take special precautions when using materials that contain cadmium, fluorides, mercury, chlorinated hydrocarbons, stainless steel, zinc, galvanized materials, beryllium, and lead. Employees shall refer to their company's Hazard Communication Program for specific requirements pertaining to the above listed hazardous materials. Compliance with the OSHA hexavalent chromium standard is mandatory.
16. Gas Welding and Cutting--Only approved gas welding or cutting equipment shall be used.
17. Approved backflow check valves shall be used on gas welding rigs in both gas and oxygen lines.
18. Welding hose shall not be repaired with tape.
19. Matches shall not be used to light a torch; a torch shall not be lighted on hot work. A friction lighter or other approved device shall be used.
20. Oxygen or fuel gas cylinders shall not be taken into confined spaces.
21. Electric Welding--Only approved electric welding equipment shall be used.
22. The electric welding machine shall be grounded in accordance with the manufacturer's specifications before use.
23. Rules and instructions supplied by the manufacturer or affixed to the machine shall be followed.
24. Welders shall not strike an arc with an electrode whenever there are persons nearby who might be affected by the arc.
25. When electrode holders are to be left unattended, the electrodes shall be removed and the holders shall be so placed or protected that they cannot make electrical contacts with employees or conducting objects.
26. When the welder must leave his or her work or stop work for more than an hour, or when the welding machine is to be moved, the power supply switch to the equipment shall be opened.
27. Grounding shall be provided to the piece being welded.

Rigging Equipment

1. All rigging equipment shall be of sufficient strength and of proper type and shall be safe for its intended use.
2. Rigging equipment shall not be loaded beyond its rated capacity.
3. Before each use, all slings, fastenings, and attachments shall be inspected for damage or defects. Damaged or defective equipment shall be immediately removed from service. Periodic, documented inspections on such equipment are also required.
4. Makeshift lifting devices formed from bolts, rods, or reinforcing steel shall not be used.
5. Slings shall not be shortened with knots, bolts, or other makeshift devices.
6. Slings used in a basket hitch shall have the load balanced to prevent slippage.
7. Slings shall be securely attached to the load by the use of hooks with retaining devices or the use of shackles or other positive latching device.
8. Slings shall be padded or protected from the sharp edges of their loads.
9. A sling shall not be pulled from under a load when the load is resting on the sling.
10. Slings shall be long enough to provide the maximum practical angle between the sling leg and the horizontal plane of the load.
11. Shackle pins shall never be replaced with bolts or other non-approved devices.
12. Only hooks with approved retaining devices shall be used. Hooks shall never be rigged so that they are point loaded at the tip of the hook unless they are designed for that purpose. The load shall be securely seated in the saddle of the hook.
13. When eye bolts are used, care shall be taken to ensure that the bolt is not side loaded.
14. Chain falls, come-alongs, and other such devices shall not be loaded beyond their rated capacities.
15. Chain falls, come-alongs, and other such devices shall always be rigged for a straight pull.
16. The chain or hoist cable for chain falls, come-alongs, or other such devices shall not be wrapped around a load and used in place of a sling unless specifically designed for that purpose.

Rigging Equipment (Continued)

17. Special rigging devices and equipment such as spreader beams, clamps, etc., shall be designed, proof tested prior to use to 125 percent of their rated load, and marked with the safe working load.

Excavations

1. Before excavation work begins, an excavation permit shall be obtained. A separate permit must be obtained for each excavation.

2. All excavations 5 feet or deeper or less than 5 feet in unstable soil shall be sloped, shored, or shielded to prevent cave-ins.

3. All excavations 4 feet or deeper shall have a stairway, ladder, ramp, or other safe means for access into the excavation with no more than 25 feet of travel in any direction.

4. All excavated and available material shall be retained 2 feet or more from the edge of the excavation.

5. All excavations shall be barricaded with the appropriate barrier tape and other protective devices as required.

6. When employees enter an excavation that may be considered a hazardous environment by site safety representatives, they must wear proper personal protective equipment.

7. Spotters must be used while performing any trenching or excavating with powered mechanical excavating equipment. The spotter must be stationed adjacent to the excavation to avoid the operations of the equipment. The spotter is responsible for visually identifying any obstruction while the equipment is excavating and for alerting the operator immediately if any obstructions are observed. If the spotter leaves the excavation area, excavation efforts must be stopped immediately until the spotter returns. Spotters must immediately stop work if an unknown utility is discovered during powered mechanical excavating.

8. The use of mechanical digging equipment is not allowed within 18 inches of the utility regardless of what it is (electrical, gas, water, sewer, etc.). Hand digging, hydroexcavating, or other safe means of excavating must be used to locate utilities and work around exposed utilities.

Safe Supports and Scaffolds

1. No employee, nor any material or equipment, shall be supported or permitted to be supported on any portion of a pole structure, scaffold, ladder, walkway, or other elevated structure, crane or derrick, etc., without its first being determined that such support is adequately strong and properly secured in place.

2. Employees shall check all scaffolding before use to ensure that it is of sufficient strength and rigidity to safely support the weight of persons and material to which it will be subjected.

3. Employees shall not use a scaffold over 6 feet in height unless a standard guardrail, with mid-rail and toe-board, is present to provide adequate employee protection.

4. Scaffold planks shall be secured in place and shall extend over their end supports by not less than 6 inches (unless cleated) nor more than 12 inches.

5. Scaffolds shall not be moved without first removing all loose tools, materials, and equipment resting on the scaffold deck.

6. The footing or anchorage points for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks shall not be used to support scaffolds or planks.

7. Scaffolds shall be erected level and plumb and rigidly braced to prevent swaying and displacement.

8. Scaffolds shall not be altered or moved horizontally while being used or occupied except when specifically designed for such use. Movable scaffolds shall have the casters or wheels locked to prevent movement.

9. The width of all scaffolds, ramps, and platforms shall be sufficient to prevent congestion of persons, materials, or equipment; and, in no case, shall they be less than 18 inches wide.

10. Synthetic or natural fiber rope shall not be used as guardrails.

11. Employees working on suspended scaffolds shall be protected by an independent lifeline, body harness, and a lanyard.

12. Safe access shall be provided for all scaffolds. Structural members should not be used as a means of access. Fall protection is required on scaffold access ladders when access to the work platform exceeds 12 feet.

13. Employees shall not use a scaffold unless it is properly tagged according to the project scaffold tagging procedure.

Safe Supports and Scaffolds (Continued)

14. When scaffolding is initially erected, an evaluation of the scaffold location and intended use must be completed for the protection of others working below. Where a potential exists for objects to fall through the guardrails of the scaffold to a lower level, netting, screening, paneling or sheeting, as appropriate, must be secured on the inside of the scaffold guardrails. The material must remain in place and be maintained while the potential for falling objects exists.

Ladders--General

1. Wooden ladders shall not be painted so as to obscure a defect in the wood; only a clear, nonconductive finish shall be used.

2. All ladders shall be inspected frequently and regularly. Ladders with weakened, broken, or missing steps; broken side rails; or other defects shall be tagged and removed from service.

3. All portable ladders must be of sufficient strength and construction for their intended use and shall, at a minimum, be classified as IA or IAA.

4. Portable metal ladders shall not be used in the vicinity of energized electrical circuits. (Exception: Such ladders may be used in specialized work, such as high voltage substations, where nonconductive ladders might present a greater hazard. These ladders shall be properly marked.) Areas around ladders, scaffolding, and aerial lifts shall be properly barricaded.

5. Ladders shall not be placed in front of a door that opens toward the ladder, unless the door is open, locked, or guarded. Areas around ladders, scaffolding, and aerial lifts shall be properly barricaded.

6. When ascending or descending ladders, employees shall have both hands free and shall face the ladder.

7. Only one employee shall work from a ladder at one time (except for hook type ladders). If two employees are required, a second ladder shall be used.

8. Ladders shall not be used as scaffold platforms.

9. Boxes, chairs, etc., shall not be used as ladders.

10. Employees shall not use a ladder until they have been properly trained in its use. Documented inspections of ladders are required on a periodic basis.

Straight Ladders

1. Portable straight ladders shall not be used without nonskid bases.

2. The ladder shall be placed so that the distance between the bottom of the ladder and the supporting point is approximately 1/4 of the ladder length between supports.

3. Straight ladders shall not be climbed beyond the third step from the top.

4. When employees work from a portable ladder, the ladder must be securely placed, held, tied, or otherwise made secure to prevent slipping or falling.

5. When dismounting from a ladder at an elevated position (as at a roof), the employee shall ensure that the ladder side rails extend at least 3 feet above the dismount position, or that grab bars are present.

6. Employees shall wear a body harness and lanyard, and tie off to a secure anchor whenever both hands must be used for the job or whenever employees are exposed to a fall in excess of 6 feet.

7. Ladders shall not be spliced together to form a longer ladder.

8. A ladder shall not be placed against an unsafe support.

9. Employees climbing a ladder with a fall exposure greater than 12 feet shall be protected by an approved cage, ladder climbing device, or by the use of a body harness, lanyard, or lifeline system.

Step Ladders

1. The top two steps shall not be used.

2. Step ladder legs shall be fully spread and the spreading bars locked in place.

3. Step ladders shall not be used as straight ladders.

4. When an employee is working on a step ladder over 6 feet high, the employee shall use a body harness and lanyard attached to a substantial anchor.

Material Handling

1. An employee shall obtain assistance in lifting heavy objects or shall use power equipment to lift them.

2. When two or more persons carry a heavy object that is to be lowered or dropped, there shall be a prearranged signal for releasing the load.

Material Handling (Continued)

3. When two or more persons are carrying an object, each employee, if possible, should face the direction in which the object is being carried.

   Note: The right way to lift is easiest and safest. Crouch or squat with the feet close to the object to be lifted, secure good footing, take a firm grip, bend the knees, keep the back vertical, and lift by bending at the knees and using the leg and thigh muscles. Employees shall not attempt to lift beyond their capacity. Caution shall be taken when lifting or pulling in an awkward position.

4. Employees should avoid twisting or excessive bending when lifting or setting down loads.

5. When moving a load horizontally, employees should push the load rather than pull it.

6. When a task is performed that requires repetitive lifting, the load should be positioned to limit bending and twisting. The use of lift tables, pallets, and mechanical devices shall be used in these instances.

7. When using such tools as screw drivers and wrenches, employees should avoid using their wrists in a bent flexed), extended, or twisted position for long periods of time. Their wrists should be maintained in a neutral (straight) position.

8. When gripping, grasping, or lifting an object such as a pipe or a board, an employee's whole hand and all the fingers should be used. Gripping, grasping, and lifting with just the thumb and index finger should be avoided.

Hand Tools

1. All tools, regardless of ownership, shall be of an approved type and maintained in good condition. (Tools are subject to inspection at any time. A supervisor has the authority and responsibility to condemn unserviceable tools, regardless of ownership.)

2. Defective tools shall be tagged to prevent their use and shall be removed from the jobsite.

3. Employees shall always use the proper tool for the job performed.

4. Hammers with metal handles, screwdrivers, knives with metal continuing through the handle, and metallic measuring tapes shall not be used on or near energized electrical circuits or equipment.

5. Tools shall not be thrown from place to place or from person to person; tools that must be raised or lowered from one elevation to another shall be placed in tool buckets or firmly attached to hand lines.

6. Tools shall never be placed unsecured on elevated places.

7. As impact tools such as chisels, punches, drift pins, etc., become mushroomed or cracked, they shall be dressed, repaired, or replaced before further use. Jackhammer points shall not be used for any other application besides use with a jackhammer.

8. Chisels, drills, punches, ground rods, and pipes shall be held with suitable holders or tongs (not with the hands) while being struck by another employee.

9. Shims shall not be used to make a wrench fit.

10. Wrenches with sprung or damaged jaws shall not be used.

11. Pipe shall not be used to extend a wrench handle for added leverage unless the wrench was designed for such use.

12. Tools shall be used only for the purposes for which they have been approved.

13. Tools with sharp edges shall be stored and handled so that they will not cause injury or damage. They shall not be carried in pockets.

14. Wooden handles that are loose, cracked, or splintered shall be replaced. The handle shall not be taped or lashed with wire.

15. Open bladed tools/knives (including multi-tools, pocket knives, fixed blade knives, utility knives, box cutters, etc.) shall not be used by employees on-site unless specifically approved by the Project ESH&S Manager. Approval to use the open bladed tool/knife must be in writing and shall detail the hazard(s) associated with the tool/knife and the ways the hazard(s) will be controlled or eliminated.

16. All cutting tools such as saws, wood chisels, approved knives, or axes shall be kept in suitable guards or in special compartments.

17. Tools shall not be left lying around where they may cause a person to trip or stumble.

18. The insulation on hand tools shall not be depended upon to protect users from shock.

Hand Tools (Continued)

19. All tools will be tethered to prevent dropping. Ratchet tools shall have locking mechanism to prevent accidental dislodgement of the socket. Tool bags will have a method of closing through a zipper, drawstring, or velcro to prevent tools and supplies from falling from the tool bag during ascent and descent activities. Tool bag hoisting ropes and hooks shall be inspected and hooks having a self-closing gate in working order. Care shall be taken when working from elevated work platforms such as grating, scaffolding, and man baskets to prevent tools and materials from falling through the openings by use of fire blanket, plywood, or other suitable material. When scaffolding is initially erected, an evaluation of the scaffold location and intended use must be completed for the protection of others working below. Where a potential exists for objects to fall through the guardrails of the scaffold to a lower level, netting, screening, paneling or sheeting, as appropriate, must be secured on the inside of the scaffold guardrails. The material must remain in place and be maintained while the potential for falling objects exists. The danger area shall be barricaded or guarded to keep personnel out of any possible drop zones.

Portable Power Tools

1. The noncurrent-carrying metal parts of portable electric tools such as drills, saws, and grinders shall be effectively grounded when connected to a power source unless:

    a. The tool is an approved double-insulated type.

    b. The tool is connected to the power supply by means of an isolating transformer or other isolated power supply, such as a 24 volt dc system.

2. All grinders shall be provided with a deadman power switch.

3. All powered tools shall be examined before use to ensure general serviceability and the presence of all applicable safety devices. The electric cord and electric components shall be given an especially thorough examination. Periodic documented inspections of all portable electric tools are required.

4. Powered tools shall be used only within their capability and shall be operated in accordance with the instructions of the manufacturer.

5. All tools shall be kept in good repair and shall be disconnected from the power source while repairs are being made.

6. Electrical tools shall not be used where there is a hazard of flammable vapors, gases, or dusts.

7. All power tools and cord sets shall be protected by GFCIs.

8. All cords shall be routed so they will not come in contact with any steel.

9. Cords shall not be tied into knots.

10. Port-a-band saws shall have dual trigger feature requiring both hands to be used to engage the saw.

Pneumatic Tools

1. Compressed air and compressed air tools shall be used with caution.

2. Pneumatic tools shall never be pointed at another person.

3. Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected.

4. Safety clips or retainers shall be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

5. Compressed air shall not be used for general cleaning purposes. Vacuum cleaning is an acceptable alternative.

6. Compressed air shall not be used to blow dust or dirt from clothing. Vacuuming methods are to be used for these cleaning purposes.

7. The manufacturer's safe operating pressure for hoses, pipes, valves, filters, and other fittings shall not be exceeded.

8. The use of hoses for hoisting or lowering tools shall not be permitted.

9. All hoses exceeding 1/2 inch inside diameter shall have a safety device (excess flow check valve) at the source of supply or branch line to reduce pressure in case of hose failure or disengagement of a connection.

10. Before adjustments are made or air tools are changed, unless they are equipped with quick-change connectors, the air shall be shut off at the air supply valve ahead of the hose. The hose shall be bled at the tool before the connection is broken.

11. Eye protection, foot protection, and other protective devices shall be worn when their use could reduce the possibility of injury.

12. Pneumatic tools shall be operated only by competent persons who have been trained in their use.

13. A pneumatic tool used where it may contact exposed live electrical parts shall have a nonconductive hose and an accumulator to collect moisture.

14. Employees shall not use any part of their bodies to locate or attempt to stop an air leak.

Chainsaws

1. Always follow the manufacturer's instructions for chainsaw operation and maintenance.
2. Ensure the chainsaw engine is the appropriate size for the project.
3. Wear BV required PPE which includes the use of chaps when using a chainsaw.
4. Hearing protection may be required depending on noise generated from equipment and location or reverberation of sound.
5. Check that all safety devices are working properly and do not operate a chainsaw that is damaged or has disengaged safety devices.
6. Start the saw on the ground or another firm support with the brake engaged.
7. Chainsaw shall not be started within 10 feet of the fueling area.
8. Keep both hands on the handles and maintain secure footing
9. Plan where the object will fall; ensure that the fall area is free of hazards; and avoid felling an object into other objects.
10. Plan the cut; watch for objects under tension; use extreme care to bring objects safely to the ground.
11. Be prepared for kickback; avoid cutting in the kickback zone and use saws that reduce kickback danger (chain brakes, low kickback chains, guide bars, etc.).
12. Do not cut directly overhead.
13. Shut off or release throttle prior to retreating.
14. Gasoline powered chainsaws shall be equipped with a continuous pressure throttle control system that will stop the chain when pressure on the throttle is released.
15. Shut off or engage the chain brake whenever the saw is carried more than 50 feet or across hazardous terrain.
16. Chainsaws, when not in use, shall be properly protected with a blade guard or case.

Cranes, Derricks, Hoisting Equipment

1. Only authorized persons shall be permitted in the cab or on the equipment. Only those designated persons who are trained and qualified shall operate the hoisting equipment.
2. No person shall be permitted to ride the hook, sling, or load of any hoisting equipment.
3. Load limits specified by the manufacturer shall not be exceeded under any circumstances.
4. Operating and maintenance procedures specified by the manufacturer shall be followed.
5. Before a lift is attempted, the lifting mechanism shall be level and firmly supported with the hoist line centered over the center of gravity of the load to be lifted.
6. No load shall be lifted until its weight has been determined and ground conditions are suitable with proper sloping, compaction, and firmness.
7. For the first lift of each day, the load shall be test lifted and the brakes checked (load lifted several inches and then tested).
8. With every load, the slings and bindings shall be checked and shall be readjusted as necessary to ensure safety and stability.
9. Signals to the equipment operator shall be given by one person designated to perform this task. The operator shall, however, obey a "Stop" signal given by anyone.
10. No employee shall be under a suspended load or inside the angle of a hoist line. No employee shall stand or work near a cable, chain, or rope under tension.
11. Hoist lines, ropes, or wire cables shall not be guided by hand when an employee is standing within reach of the drum or sheave.
12. Wire rope loops shall be made by proper splicing or mechanical clamping of the tail section. Wire rope clips shall not be used to form eyes in wire rope bridles or slings.
13. Operators shall not leave their position at the controls of cranes, hoists, derricks, or other lifting devices while the load is suspended. Operators found sleeping while in the cab will be removed from the project.
14. Operators of cranes, derricks, hoists, and other hoisting equipment shall exercise extreme caution when close to energized lines or equipment. The operator shall keep the equipment at least 10 feet away from all lines energized up to 50 kV and 0.4 inch more for each 1 kV over 50 kV.
15. Tag lines shall be used on all loads. All tag lines are to be positioned and maneuvered to avoid contact with objects that may impact the safety of the load being lifted.
16. All spreader bars shall be tagged by manufacturer with the rated capacity.
17. All hydraulic cranes with over 15 ton capacity shall be equipped with functioning anti-two blocking devices and a functioning load moment indicator.

Cranes, Derricks, Hoisting Equipment (Continued)

18. A report (lift plan) shall be required prior to all critical lifts. A critical lift is a nonroutine lift/pick that by classification and characteristics requires in-depth and additional planning to ensure safe hoisting execution. All lifts that reach 85 percent of crane capacity or greater shall be sent for review and approved by the Black & Veatch Crane Specialty group. Lifts shall not be allowed if the lifting device reaches 90 percent of the manufacturer's rated capacity. Deviations must be approved by the Director of ESH&S.

    A critical lift plan shall be developed prior to making a lift when at least one or more of the following criteria is present:

    a. Any lift that reaches 75 percent of the hoisting equipment's rated capacity.

    b. Any lift in excess of 25 tons (50,000 pounds).

    c. Any lift requiring the use of more than one piece of hoisting equipment including single crane lifts that utilize two hoist drums to manipulate a load.

    d. Any lift or crane that is within 20 feet of an energized power line.

    e. Any lift over an occupied building (not applicable during building construction).

    f. Any lift over moving capital equipment.

    g. Any lift that involves hoisting personnel.

    h. Any lift in which the hoisting equipment encroaches on highways, roadways, or railroad rights-of-way, unless the corridor is shut down to traffic.

    i. Any lift where payloads are required to swing directly over or under energized power lines.

    j. Helicopter lifts over Federal Aviation Administration defined congested areas.

    k. Any lift that the crane operator or lift director deems critical.

19. All cranes shall have anti-two blocks.

20. The use of load movement indicators (LMI) on all hydraulic cranes in excess of 15 ton capacity including, but not limited to truck, rough terrain, and crawler cranes.

21. Outriggers shall be deployed according to manufacturer's requirements.

22. Outrigger pads shall be in good condition and used at all times.

23. Appendix B (Cranes and Derricks Procedure) will also be a requirement of this manual.

Flammable and Combustible Liquids

1. Smoking or open flames are not permitted in posted areas or within 50 feet of an operation using flammable liquids.

2. Flammable liquids (Category 1, 2, 3) must be kept in a vapor tight closed container when actually not in use.

3. At least one 4A60BC fire extinguisher must be kept between 25 feet to 75 feet from tanks.

4. Waste saturated with flammable liquids must be disposed of in self-closing metal containers.

5. When transferring flammable liquids from one container to another container, the two containers must be electrically bonded and grounded to the earth.

6. Liquid fuel engines and heating devices must be shut off and allowed to cool to the touch before refueling.

7. Containers of flammable liquids and fueled heating devices must not be used, stored or located below grade.

8. Any spill must be promptly stopped and the supervisor contacted. The employee shall initiate cleanup of the spill to the extent capable.

Confined or Enclosed Spaces

1. Only employees who have been properly trained on the hazards associated with confined space work shall be allowed to enter a confined space.

2. Before entering a confined space, employees shall obtain a Confined Space Entry Permit (Figure 22) from the Contractor.

3. Before any entrance cover to a confined space is removed, it shall be determined that there are no temperature or pressure differences, or other hazardous conditions that may injure the employees removing the cover.

4. When covers are removed from confined spaces, the opening shall be guarded by a railing, temporary cover, or other temporary barrier.

5. Before entering a confined space, employees shall test all levels of the confined space for the presence of flammable or toxic gases and vapors or an oxygen deficient atmosphere.

Confined or Enclosed Spaces (Continued)

6. If flammable or toxic gases or vapors are detected or if an oxygen deficiency is found, forced ventilation shall be used to maintain oxygen at a safe level and to prevent a hazardous concentration of flammable or toxic gases and vapors.

7. While work is being performed in the confined space, a person with basic first aid training shall be immediately available to render emergency assistance if there is reason to believe that a hazard may exist in the space or if a hazard exists.

8. Entry into a confined space with an unsafe atmosphere shall be avoided if at all possible. Employees required to enter a confined space with an unsafe atmosphere shall be equipped with a fresh air breathing apparatus, body harness, and attended lifeline.

9. Electric welding, gas welding, cutting, or any other hot work shall not be performed on the interior or exterior, or near the openings of any confined space that may contain flammable or explosive gases or vapors until the space has been properly cleared.

10. Compressed gas bottles shall not be taken into a confined space.

11. Safe access to the confined space shall be maintained at all times. If possible, all cords, hoses, leads, etc., shall be routed through an entrance other than the employee access into the confined space.

12. Before employees are allowed to enter a confined space, all electrical and mechanical energy sources that could affect the employees working in the space shall be physically rendered inoperative, locked out, and tagged. If required, the space shall be drained, vented, and cleaned.

13. Contractors are responsible for supplying workers with the proper air monitoring equipment.

Heaters

1. UL approved salamanders, Redi heaters, and space heaters are the only approved heaters on the jobsite.

   Heaters shall be used in accordance with 29 CFR 1926.154.

2. Job-made heaters, solid fuel salamanders, and open fires are prohibited on the jobsite.

Powered Industrial Trucks (Forklifts)

1. All powered industrial truck operators shall be trained and certified by their employer for the type of truck to be used.

2. Training will include both formal instruction and practical training.

3. At a minimum, formal training will include instruction on the following:

   a. Hazards associated with the type of truck.

   b. Hazards of the workplace.

   c. General hazards that apply to most trucks.

   d. Safe operation and maintenance.

   e. Manufacturer's operating instructions.

4. Retraining is required after an accident or a near miss.

5. The Equipment Operator's Daily Checklist (Figure 29) will be completed before each shift and any hazardous condition corrected before use.

Steel Erection

1. Fall protection is required 100 percent of the time for all steel erection activities when employees are exposed to a fall in excess of 6 feet or when required by additional rules.

2. Cranes involved in steel erection activities shall be inspected prior to each shift by a competent person.

3. The crane operator shall have the authority to stop work operations that are unsafe.

4. All loads shall be rigged by a qualified rigger.

5. A qualified rigger shall inspect the rigging prior to each shift in accordance with 29 CFR 1926.1404 (r)(1).

6. No employee shall work directly below a suspended load except for employees engaged in the initial connection of the steel or employees necessary for the hooking and unhooking of the load.

7. Bundle packaging and strapping shall not be used for hoisting unless specifically designed for that purpose.

8. Uninstalled metal decking shall be secured against displacement.

9. Roof and floor hole openings shall be decked over or protected in accordance with 29 CFR 1926.501(d)(4).

10. Metal decking holes and openings shall not be cut until immediately prior to being permanently filled with the equipment or structure needed or intended to fulfill its specific use or shall be immediately covered.

Steel Erection (Continued)

11. All covers shall be capable of supporting twice the weight of any loads that may be imposed on them at any one time, secured against displacement, and shall be marked to warn of the hazard. Smoke domes and skylight fixtures that have been installed are not considered covers for openings.

12. All columns shall be anchored by a minimum of four anchor rods.

13. Anchor rods shall not be repaired, replaced, or field modified without the approval of the project engineer of record. If an employee notices damaged anchor rods, he/she shall immediately notify his/her supervisor.

14. No construction loads shall be placed on steel joists until all bridging is installed and all joist bearing ends are attached.

15. On systems engineered metal buildings, joist connections shall be made on both ends before releasing hoisting cables, allowing personnel on joists, and allowing any construction loads on joists.
16. Purlins and girts shall not be used as anchorage points for fall arrest systems unless written approval is obtained from a qualified person.

17. Any time a Contractor removes grating or creates an open hole, a Grating Removal/Open Hole Permit (Figure 42) must be submitted no less than 24 hours in advance of removal of the grating creating the hole. All necessary safety precautions such as, but not limited to, placement of a hard barricade, placement of adequate warning signage, etc., shall be met prior to removal of the grating or creation of the hole. At no time shall grating removal or creation of a hole prevent adequate egress for other work operations in the area. The permit shall be completed after the grating is replaced and the hole adequately filled.

18. Christmas treeing (multiple lifts at one time) is permissible with strict adherence to 29 CRF 1926.753. Prior to occurring, the plan, employee training, and other supporting documentation shall be submitted to the Project ESH&S Manager.

Mobile Equipment

1. Seat belts shall be worn by all personnel riding in vehicles (except for school buses without installed seat belts), as well as heavy equipment operators and forklift operators. Those observed not wearing seat belts may have their driving privilege revoked.

2. Passengers riding in school buses on construction projects not equipped with seat belts are permitted to do so. In addition, they have to be seated no more than two to a seat with no one standing. This is only allowed on private property, operated below the posted site speed limit, and no more than 20 miles per hour. School buses are not to be used to transport cargo.

3. No riders other than the operator shall be allowed on any piece of mobile equipment unless designed for that purpose.

4. Personnel are not allowed to ride in the back of pick-up trucks, on flat-bed trailers, or on any piece of mobile equipment not designed for that purpose.

5. Backup alarms shall be used where the operator has a restricted view to the rear of the equipment and shall be loud enough to be heard over the surrounding noise levels.

6. Backup cameras--Backup cameras or proximity alert systems are required on all skid steers.

    a. The camera feed shall be on and functional at all times. Cameras and monitors shall be purpose built and suitable for the environmental conditions. The placement of the camera and video feed shall be placed in a manner to not impact machine operations The device shall not be turned off or disabled by the operator.

    b. Proximity alarms shall be placed in a manner that the device will alarm when the machine is within 6 feet (2 meters) of an object to the rear/back of the machine. The device shall be on and functional at all times. Proximity devices shall be purpose built and suitable for environmental conditions. The placement of devices shall not impact machine operation. The warning alarm shall be clearly audible when the machine is operating. The device shall not be turned off or disabled by the operator.

7. Maneuvering and Spotters--To avoid injury to persons and to prevent property damage, extreme caution must be exercised when maneuvering mechanized equipment or vehicles (aerial lifts, cranes, forklifts, trucks, cars, skid steers, trackhoes, backhoes, etc.). A spotter must be used to assist the operator/driver in safely maneuvering the equipment.

    When maneuvering equipment, the operator/driver must do the following:

    a. Keep a constant lookout during the entire time he/she is maneuvering.

    b. Carefully check any blind areas.

    c. Maneuver slowly.

    d. If in an area of the project where a spotter is required, obtain a spotter prior to moving.

Mobile Equipment (Continued)

Each site shall develop a map that clearly defines any areas of the project where the use of a spotter is **not required**. This map shall be kept current, posted, and appropriately communicated to all personnel on-site. The map shall be developed and maintained by the Construction Manager, in concert with Safety, and approved by the Project Field Manager.

Criteria for spotter required areas include the following:

a. Maneuvering equipment within 6 feet of stationary objects, construction activities, or other pieces of equipment.

b. Maneuvering equipment in areas with obstructions or where work activities are occurring.

c. Maneuvering equipment within 50 feet of overhead power lines (or other overhead obstructions such as piperacks, communication cables, bridges, etc.).

d. Unless otherwise noted on the map, craft and staff parking lots are exempt from spotter requirements.

Except as defined by the site map, **spotters shall be used whenever the equipment is being maneuvered** (forward, backward, up, down, rotating, etc.). This includes all mechanized mobile equipment that is used on construction projects (aerial lifts, cranes, forklifts, trucks, cars, skid steers, trackhoes, backhoes, etc.). As part of the daily STA, supervisors must ensure the usage of spotters for mobile mechanized equipment and plan accordingly. If spotters are not included in the plan, the discipline superintendent must approve the plan on the STA before work begins. Spotters must be trained on their duties and identified to the equipment operator so proper communication and instruction occurs. Vehicles and equipment equipped with backup cameras and proximity alert systems that warn operators and drivers of hazards when backing may be substituted for spotters where appropriate.

8. To avoid turnover of trailers while dumping material, tractor must be lined up straight with trailer. Tractor and trailer must be on firm, compacted and level ground. Avoid dumping in strong winds. Line trailer up with wind to avoid possible turnover from cross winds. Operator should warn all persons to stand clear at least 35 feet (11 meters) from trailer being raised and lowered. Should trailer start to tilt, move control immediately to "lower" position. Under inflated tires can cause instability when dump. Always check tires to make sure they are properly inflated. Operator must stay at the controls while dumping is in progress.

Fatigue Management

Fatigue Planning

For extended work hours and abnormal work shifts where "safety sensitive" tasks are performed, the Contractor will develop and implement a fatigue management plan that contains strategies to effectively control the risks of fatigue. The plan shall be developed by analyzing the respective task and shall set out a risk management approach on the basis of regulatory requirements and consultation with the workforce. The plan will, at a minimum, address the following:

a. Identify the hazards of fatigue.

b. Assess the risks of fatigue.

c. Implement effective risk control measures.

d. Regularly monitor and review the effectiveness of the controls.

The fatigue management plan shall outline the following details as a minimum:

a. The times of day that work takes place.

b. The length of time spent at work and in work-related duties.

c. Type and duration of a work task and the environment in which it is performed.

d. Equipment to be utilized to perform a task.

e. The quantity of rest obtained prior to and after a work period.

Fatigue Controls

The fatigue management plan shall consider controls to reduce the risks of fatigue. To keep personnel rested and alert, the following work hour guidelines shall be followed by all contractors and approvals shall be provided before the hours are served:

a. Employees (Non-DOT Affected):

- Between 14 hours to 16 hours per day in a 24 hour period requires Project Manager level approval.
- Workers shall not work over 13 consecutive days. After 13 consecutive days, the worker must break for 48 hours.
- Workers must not work over 70 hours in 7 days without Project Manager level approval.

Fatigue Controls (Continued)

b. DOT Affected Worker Requirements:

- No more than 14 hours per day in a 24 hour period.
- Workers must not work over 70 hours in 7 days without a 48 hour break.

Fatigue Monitoring

Supervisors shall monitor working hours and ensure that worker hours are in accordance with regulatory requirements and shall monitor employees for signs of fatigue. Work hours should be monitored by observing affected employees, reviewing timesheets, and reviewing electronic card systems on a regular basis. Supervisors shall ensure that employees demonstrating signs of fatigue are consulted immediately and removed from safety-sensitive operations. Additionally, employees shall notify their supervisor should they begin to demonstrate signs of fatigue or notice other employees demonstrating signs of fatigue. Supervisors shall ensure that appropriate actions are taken for employees reporting signs of fatigue to safeguard employees.

Heat Stress Prevention

Contractors are required to have a Heat Stress Prevention Plan which follows governmental requirements. Information shall be provided in the orientation and during specific heat illness prevention training provided by the contractor.

The purpose of this plan is to identify the hazards affiliated with extreme heat. The plan should be communicated to all affected employees to prevent heat-related illnesses.

This plan will identify the designated person that is assigned specific tasks, provide specific details, and determine the form of communication for carrying out the plan.

Electrical Installations

A specific JHA shall be performed when working within energized or partially energized electrical equipment, both permanent and temporary. Where an arc flash hazard is identified in accordance with NFPA 70E arc flash risk assessment, personnel within the arc flash boundary, shall wear arc flash clothing as required by the standard.

All live electrical work shall be conducted in accordance with the approved Live work permit.

An electrician using a voltage meter to test for the presence of zero voltage shall use a proving device to verify that their voltage meter is working correctly immediately before and after measuring voltage. Personnel performing voltage testing shall comply with the requirements of NFPA 70E and wear the required arc flash PPE.

The requirements of NFPA 70E shall be applied when performing battery and UPS associated works.

All workers working within or in the vicinity of energized electrical equipment shall be trained in the use of that equipment and use the arc flash maintenance mode switch when applicable.

The contractor should assume that workers working inside energized LV and MV electrical equipment with voltages above 125V will be required to wear arc Category 2 arc flash clothing. This will include personnel performing live work, electrical testing as well as the pulling and termination of cables in energized equipment. Enhanced PPE may be required for some circumstances depending on the hazard exposure.

Reporting Accidents and Injuries

All accidents and injuries are to be reported to the Contractor's Safety Representative on the same day they happen.

Violations

Penalties for willful or repeated violation of the Project Occupational Safety and Health Rules by an individual shall include discharge from the Project.

If there is a conflict between project safety and health rules, Contractor's Safety Program rules, and governmental regulations, the most restrictive shall apply.

EQUIPMENT OPERATOR'S DAILY CHECKLIST

Project No. _____ Type of Equipment _____ Serial No. _____

Week Beginning _____ Shift No. _____ Truck No. _____

This check must be made by the truck operator daily at the start of the shift. Certain items listed are not included on some models. Check all items applicable to unit noted above.

Fill in appropriate box: Mark **--** if OK or **X** if needs repair or adjustments (provide details in Comments)

		MON		TUES		WED		THUR		FRI		SAT		SUN	
	DAMAGE Bent, dented or broken parts														
	LEAKS Drive unit, brakes, hydraulics														
	TIRES AND WHEELS Drive wheels, load wheels, casters														
	FORKS In place, properly secured														
	CHAINS, CABLES, AND HOSES In place														
	HOUR METER Operating														
	BATTERY Water level, vent caps in place, cleanliness														
	BATTERY CONNECTOR Cracked, burnt, light indicating														
	GUARDS Overhead, load backrest, battery retainer														
	SAFETY DEVICES Flashing lights, indicator lights, safety shield, operator harness, warning labels, etc., in condition as equipped														
	HORN Sounds														
	STEERING Handling, no excessive play														
	TRAVEL CONTROLS All speed range, forward and reverse, no unusual noise														
	HYDRAULIC CONTROLS Raise and lower, tilt forward and rearward, reach in and out, side shift right and left, etc., no unusual noise														
	BRAKES Stop truck within required distance, work smoothly, brake override functions														
	PARKING BRAKE Seal, hand, foot														
	BATTERY CHARGE Discharge meter in full green or 75% charge after raising forks														
	POWER DISCONNECT Cuts off all electric power														
	ATTACHMENTS Functions properly, no unusual noise														
	UNIT SWITCHES Travel limit, lift limit, tilt limit														
	HOUR METER READING														
	OPERATOR'S INITIALS														
	SUPERVISOR'S OK														

COMMENTS (items needing repair or adjustment)

CAUTION

If the truck is found to be in need of repair, is in any way unsafe, or contributes to an unsafe condition, the matter shall be reported immediately to the designated authority, and the truck shall not be operated until it has been restored to safe operating condition.

If during operation the truck becomes unsafe in any way, the matter shall be reported immediately to the designated authority, and the truck shall not be operated until it has been restored to safe operating condition.

Do not make repairs or adjustments unless specifically authorized to do so.

Figure 29

FIRST AID RESPONDER LIST

Project Name _____

Project No. _____

First Aid Responders on This Project	
Employee Name	**Card Expiration Date**

In the event of an accident requiring first aid, contact one of the individuals listed above immediately.

TELEPHONED BOMB THREAT CHECKLIST

INSTRUCTIONS

LISTEN!!! **Do Not Interrupt the Caller Except to Ask:**

1. When will it go off? _____

   Certain Hour _____ Time Remaining _____

2. Where is it planted? _____

   Building _____ Area _____

3. What does it look like? _____

_____

_____ _____ _____

Name of Operator Time of Call Date

Caller's Identity: ☐ Male ☐ Female Approximate Age _____

Origin of Call: ☐ Local ☐ Long Distance ☐ Internal

Voice Characteristics

☐ Loud ☐ Soft
☐ High pitched ☐ Deep
☐ Raspy ☐ Pleasant
☐ Intoxicated ☐ Other (explain) _____

Speech

☐ Fast ☐ Slow
☐ Distinct ☐ Distorted
☐ Stutter ☐ Nasal
☐ Slurred ☐ Other (explain) _____

Language

☐ Excellent ☐ Good
☐ Fair ☐ Poor
☐ Foul ☐ Other (explain) _____
☐ Use of certain words or phrases _____

Accent

☐ Local ☐ Not local
☐ Foreign ☐ Regional
☐ Racial ☐ Other (explain) _____

Manner

☐ Calm ☐ Angry
☐ Rational ☐ Irrational
☐ Deliberate ☐ Emotional
☐ Coherent ☐ Incoherent
☐ Laughing ☐ Other (explain) _____

Background Noises

☐ Office machines ☐ Street traffic
☐ Factory machines ☐ Airplanes
☐ Animals ☐ Trains
☐ Quiet ☐ Voices
☐ Mixed ☐ Music
☐ Party atmosphere ☐ Other (explain) _____

ACTION TO TAKE IMMEDIATELY AFTER CALL

1. Notify Black & Veatch ESH&S Manager.
2. Write out message in its entirety as received from the information.

PROJECT SECURITY REGULATIONS

INTRODUCTION

Welcome to the project. Black & Veatch is glad to have you aboard and requests your cooperation, and that of your fellow employees, in helping us to protect your life and health, and to safeguard property that belongs to you as well as property that belongs to others.

The project will become an important energy source. You're here because your employer (and our contractor) believes you have the skills to do some very essential work. We hope your experience here will be productive for both of us, and safe and enjoyable for you.

In order to meet this end, an effective security program will be conducted at the Jobsite. The most modern security devices will be utilized, including chemical detection, fingerprint analysis, electronic surveillance and explosive detection equipment, as well as many checks and balances within the system. For the protection of everyone, Security Officers will take immediate action against any violator.

Experience shows that to be successful, a security program must focus on certain particular areas of concern. These are outlined below.

Security Officers will conduct inspections of individuals, backpacks, lunch boxes, briefcases, toolboxes, and other carried or worn items capable of concealing tools or materials. Both management and labor personnel will be subject to inspection and all inspections will be made on a nondiscriminatory basis. Anyone that is asked to open a lunch box, briefcase, toolbox, etc., in his possession will be expected to do so. Refusal to cooperate with the inspection program will result in termination of employment.

Vehicles entering or leaving the Jobsite are also subject to inspection at any time by the Security Officers. The driver of the vehicle will also be expected to open compartments upon request. Failure to comply with vehicle inspection procedure will result in denial of future admittance to the Jobsite and termination of employment.

Most routine inspections will occur when leaving the Jobsite. Expanded security measures will be implemented when circumstances require their use. Expanded inspections will include a complete inspection of all personnel, carried or worn items, and vehicles prior to entry to the Jobsite. Refusal to cooperate with the inspection program will result in the refusal of entry to the Jobsite and termination of employment.

Alcohol and Drugs--The use of narcotics and alcohol is strictly prohibited at the Jobsite. Anyone reporting for work under the influence of narcotics, intoxicants, or nonprescribed drugs will be discharged.

Anyone who transports, or allows to be transported, onto the Jobsite, any narcotic, alcoholic beverage, or nonprescribed drug will be discharged. Individuals may be inspected for narcotics prior to entering the Jobsite.

Identification--All full-time (40 hours per week) site personnel will be issued a site identification badge that remains the property of Black & Veatch. This identification badge shall be worn on the upper part of the body in plain view. This identification badge shall be surrendered to any Black & Veatch personnel or site Security Officer upon demand. Failure to comply with this regulation will result in the refusal of entry to the Jobsite.

Vehicle Operation--Jobsite personnel shall enter and leave the project through the designated gate and shall not go beyond their assigned place of work or enter posted areas. Parking is restricted to posted areas. The owner of a vehicle parked in an unauthorized area will be notified to move his vehicle immediately if he or she can be found; if not, the vehicle will be towed at the owner's expense.
Operators of vehicles must observe all traffic control devices, including speed limits, no passing, stop, and all other posted signs.

Failure to obey traffic control devices will result in disciplinary action to include removal of site driving privileges.

Visitors--Visitors will not be permitted on the Jobsite without proper clearance and identification. Visitors are bound by the same security procedures as employees. Visitor identification badges and vehicle passes are the property of Black & Veatch and will be surrendered upon leaving the Jobsite.

SECURITY RULES

Anyone working at the Jobsite will be subject to discharge and/or prosecution on criminal charges if he or she:

(1) Violates any state or federal law on the Jobsite.
(2) Fights, creates a disturbance, or engages in any negligent act that could result in injury or death.
(3) Conspires or participates in placing a threat of any type to disrupt any work effort.
(4) Destroys or attempts to destroy any property belonging to the project or any Jobsite contractor, his employees, or any visitors.
(5) Intentionally engages in conduct constituting a substantial step toward the commission of any criminal offenses.
(6) Possesses firearms or other deadly weapons on his or her person or within a vehicle under his or her control on the Jobsite.
(7) Abuses, defaces, or destroys any item of Jobsite property, or orders such acts, without specific authorization.
(8) Enters without authorization into an area that is not his or her assigned work area.
(9) Commits any act that constitutes moral misconduct.
(10) Physically and/or verbally assaults or molests any Security Officer, supervisor, or fellow employee on or off the Jobsite.
(11) Drives any vehicle in a manner that may result in injury to anyone on the Jobsite.

Possible consequences for prohibited acts include a variety of options ranging from Safety Security Violation Citation to arrest and criminal prosecution.

The following are specifically prohibited at the Jobsite:

(1) Firearms or other deadly weapons.
(2) Explosives or fireworks.
(3) Alcoholic beverages.
(4) Any drugs (whether prescription or nonprescription) which impair physical or mental faculties, or any prescription drugs without valid prescription.
(5) Animals.
(6) Any unauthorized vending device including soft drinks, snacks, or other foodstuff.
(7) Unauthorized sale of food, tickets, beverages, or other merchandise.
(8) Any open fires including barrels and fire rings.
(9) Posting of unauthorized signs.
(10) Any substance that creates a hazard and not related to the Work.

All site personnel are expected to comply with requests of Security Officers. Failure to do so may result in discharge.

Figure 32

WORK RULES RECEIPT

I, _____, certify that Construction Management has issued me a copy of the Project Safety, Security, and General Work Rules. I further acknowledge that the Rules contained within must be complied with to maintain my employment status at the Project.

The undersigned will make every effort to become familiar with said regulations.

Signed _____

Contractor _____

Craft _____ Date _____

IDENTIFICATION BADGE ENVELOPE

Name: _____ DOB: _____
Last First Middle Month/Day/Year

Contractor: _____ Craft: _____

Employee Number: _____ ID Issue Date: _____ Return Date: _____

Reissue Date: _____ _____ _____ _____

The undersigned acknowledges this identification badge remains the property of Black & Veatch. This identification badge shall be surrendered to any Project Security Officer or Black & Veatch staff member upon demand. The badgeholder further agrees to wear this identification badge on the upper torso of his or her body in plain view.

Signed this _____ day of _____, 20_____.

X _____
Identification Badge Envelope

AFTER HOURS ACCESS REQUEST

Any contractor having personnel on-site after normal working hours must submit to the Site Safety Manager the names of the personnel and the hours to be worked. This information must be submitted on the standard After Hours Access Request Form and is to be received by the Site Safety Manager no later than 3:00 p.m. the day for which the overtime is requested, or no later than 3:00 p.m. Friday, or the last day of the workweek for all weekend overtime.

Without this prior approval, all personnel wishing access to the project will be refused admittance.

This is not a request for premium overtime payment.

Name: Last, First, Middle	Badge No.	Date(s) To Be Worked	Time From	Time To	Reason
			☐ a.m. ☐ p.m.	☐ a.m. ☐ p.m.	
			☐ a.m. ☐ p.m.	☐ a.m. ☐ p.m.	
			☐ a.m. ☐ p.m.	☐ a.m. ☐ p.m.	
			☐ a.m. ☐ p.m.	☐ a.m. ☐ p.m.	
			☐ a.m. ☐ p.m.	☐ a.m. ☐ p.m.	
			☐ a.m. ☐ p.m.	☐ a.m. ☐ p.m.	
			☐ a.m. ☐ p.m.	☐ a.m. ☐ p.m.	
			☐ a.m. ☐ p.m.	☐ a.m. ☐ p.m.	
			☐ a.m. ☐ p.m.	☐ a.m. ☐ p.m.	
			☐ a.m. ☐ p.m.	☐ a.m. ☐ p.m.	

Authorized By _____ Badge No. _____ Contractor _____

Date _____ Time _____ ☐ a.m. ☐ p.m.

Month Day Year

VEHICLE PASS APPLICATION

Pass No. Issued _____

Date Issued _____

1. Company _____

2. Name _____ Badge No. _____
   (Last) (First) (Middle Initial)

3. Vehicle Description

   Make _____ Serial No. _____

   Model _____ Color _____

   Year _____ License No. _____ State _____

4. Use of Vehicle _____

5. Company Owned Vehicle: ☐ Yes ☐ No

6. Company Leased Vehicle: ☐ Yes ☐ No

   Note: If No. 6 is "Yes," attach a copy of Bona Fide Lease Agreement.

7. Owner Information (if not covered under No. 5 or 6)

   Name _____ Insured By _____

   Address _____ Address _____

   _____ Policy No. _____

   Note: Contractor Superintendent must approve before Black & Veatch approval will be considered.

I, the undersigned, knowingly and voluntarily consent to a search of the above mentioned vehicle by Black & Veatch or authorized security personnel while I am entering, on, or prior to leaving the project. I am hereby waiving my constitutional right to refuse to consent to such search.

Signature of Applicant _____ Date _____

CONTRACTOR APPROVAL

Signed By _____ Date _____

BLACK & VEATCH (ONLY)

Pass Approved By _____ Date _____

Pass Denied By _____ Date _____

AUTHORIZED SIGNATURE CARD

Contractors must submit one card for each person who they want authorized to sign the Equipment and Material Removal Permit, After Hours Access Request, and the Vehicle Pass Application.

Three signatures are required for comparison purposes. This card must be submitted to Black & Veatch. Without prior approval, none of the above forms will be accepted and the respective requests shall be denied.

Project Name _____

Name _____ Contractor _____

Badge No. _____

Work Phone _____ Date _____
Month/Day/Year

Home Phone _____

Signatures _____

_____

_____
(three signatures required for comparison purposes)

EQUIPMENT AND MATERIAL REMOVAL PERMIT

NAME OF PERSON RECEIVING PROPERTY (print or type)

_____ Date _____

Last First Middle

Employee Badge No. _____

Employer _____

ITEM(S) REMOVED

Show name of item, make or brand name, equipment serial or identification number. Include special markings.

No.	Quantity and Description of Property	Serial or ID Number	Security Only

Please place the words "LAST ITEM" in large letters below last authorized item listed.

Is this equipment or material to be returned? ☐ Yes ☐ No _____

Exceptions

If yes, by what date? _____ 20 _____

Property Removed By _____ Approved By _____

Recipient Signature Recipient's Immediate Supervisor

Authorized Signature for Contractor _____ Date _____ 20 _____

Time Out Gate _____ ☐ a.m. ☐ p.m. Date _____ 20 _____ By _____ Photo _____

Security Officer

Returned _____ 20 _____ Checked in By _____ _____

Security Officer Computer Entry

ENVIRONMENTAL INCIDENT REPORT

Site _____ Report No. _____

Contractor _____ File No. _____

Date of Occurrence _____ Time _____

Date Contractor Incident Report Received _____ Time _____

Location of Incident _____ Employer _____

Who Discovered Incident _____ Employer _____

Incident Type	Spill	Surface Water	Soil Contamination	Historical Remains	Wastewater	Other
Quantity						

DETAILS OF INCIDENT

Medium Affected	Soil	Air	Sediment	Water	Habitat	Other
Quantity						

NARRATIVE REPORT

CONCLUSIONS/RECOMMENDATIONS

CORRECTIVE ACTION TAKEN

CORRECTIVE ACTION RESPONSIBILITY

Organization _____ Individual _____

Date Corrective Action Completed _____ Attachments _____

_____ _____

Signature Date

_____ _____

Signature (Black & Veatch) Date

WATER DISCHARGE PERMIT

Site Name _____

Contractor _____

Requesting Supervisor _____

Date _____ Time _____ ☐ a.m. ☐ p.m.

☐ Planned Discharge ☐ Unplanned Discharge

Discharge Date _____ Time _____ ☐ a.m. ☐ p.m.

Types: ☐ Storm Water ☐ Non-Storm Water ☐ Industrial Wastewater

☐ Wastewater ☐ Dewatering

Water Discharge Source _____

Discharge Location _____

Estimated Volume _____

NDPDES Permit No. _____

Discharge Contaminated? _____

Contamination Comments _____

Discharge Method _____

Discharge Destination _____

Dewatering Method _____

Infiltration Trenches Location _____

Turbidity Barricades Location _____

All Signatures MUST be complete below before discharge/pumping

Site Engineering Mgr/Designee _____

Sample Analyzed _____

Supervisor/Designee _____

Discharge Complete _____

REQUEST FOR LOWER-TIERED SUBCONTRACTOR USAGE

Project Name _____ Date _____

Project No. _____ Site No. _____

Subcontractor requesting the use of a lower-tiered subcontractor _____

Subcontract professional making the request _____

SUBCONTRACTOR TO COMPLETE

Legal name of lower-tiered subcontractor being requested _____

Reason for the request of use _____

Scope of work to be awarded to lower-tiered subcontractor _____

Has a subcontractor qualification review been performed? ☐ Yes ☐ No
Subcontractor shall use Lower-Tiered Subcontractor Qualification Review form (required to be completed and accompany the request).

MANAGEMENT TO COMPLETE

Has the lower-tiered subcontractor been rejected previously?	☐ Yes	☐ No
What is the lower-tiered subcontractor's current Experience Modification Rate (EMR)? <1.00	☐ Yes	☐ No
What is the lower-tiered subcontractor's recordable injury rate for the previously completed year? <3.5	☐ Yes	☐ No
What is the lower-tiered subcontractor's days away from work rate for the previously completed year? <1.2	☐ Yes	☐ No
Has the lower-tiered subcontractor had any fatalities in the past 3 years? If yes, describe:	☐ Yes	☐ No
Has the lower-tiered subcontractor been cited by OSHA in the past 3 years? If yes, describe:	☐ Yes	☐ No

REQUEST APPROVAL STATUS

☐ **Approved** ☐ Subcontractor is required to complete an exception request using the Exception Request for Use of a Lower-Tiered Subcontractor form and submit it to the ESH&S Manager for review and approval.

Reason for Rejection _____ **Risk Mitigation Plan Required** ☐ Yes ☐ No

Approved By _____

_____ _____
ESH&S Manager's Printed Name ESH&S Manager's Signature

GRATING REMOVAL/OPEN HOLE PERMIT

Date _____ Location _____

Project Schedule _____ 1st Shift _____ 2nd Shift

Grating Removed or Hole Opened _____ through _____
Date Date

WORK ACTIVITY

_____

_____

_____

_____ Hard Barricade at Hole _____ Watch Required? ☐ Yes ☐ No

_____ Barricades on Lower Level _____ Covers 3/4 Inch Plywood Minimum (if required)

_____ Hazard Signs Posted (if required) _____ Number of Clips Removed

REQUESTS/APPROVALS

	Signature	Date
Requested by Foreman		
Superintendent/General Foreman		
Safety Supervisor		

WORK ACTIVITY COMPLETED

Grating Put in Place/Number of Clips Reinstalled _____

	Signature	Date
Inspected By		
	Superintendent/General Foreman	
Hole Filled In		
Inspected By		
	Superintendent/General Foreman	
Verified By		
	Safety Supervisor	

CONFINED SPACE ENTRY HAZARD ASSESSMENT

Project _____ Location of Confined Space _____

Date/Time of Entry _____ Contractor _____

Tank _____ Pipe _____ Manhole _____ Tunnel _____ Vault _____ Other _____

Work Description/Purpose of Entry _____

A confined space may be entered without the need for a written permit or an attendant when the space is determined not to be a Permit Space.

A confined space shall be considered a Permit Space until a hazard assessment performed by a competent person demonstrates otherwise.

1. Does the space contain a material or substance that has the potential to engulf an entrant? (Examples: soil, grain, water)

   ☐ Yes ☐ No

2. Does the space have an internal configuration that the entrant could become trapped in or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section? (Examples: bins, hopper, silo)

   ☐ Yes ☐ No

3. Does the space contain or have the potential to contain a hazardous atmosphere? (Examples: gas powered equipment exhaust in or near the space that may settle, welding fumes, fumes or gases from open pipes, fly ash)

   ☐ Yes ☐ No

4. Does the space contain any other recognized serious safety or health hazards? (Examples: moving equipment or machinery, live electrical power lines, hazardous chemicals, extreme temperature)

   ☐ Yes ☐ No

If you answered "Yes" to any of the above questions, the space is classified as a Permit Space and requires the use of the Confined Space Entry Permit.

Initial Test of Atmosphere

Test	Time	Level
Oxygen (19.5-23.5%)		
LEL (< 10%)		
CO (< 25 PPM)		
H_2S (< 1 PPM)		
Other		
Other		

If the initial assessment finds that there is no potential for serious physical hazards or hazardous atmospheres, a Confined Space Entry Permit is not required but must still be performed under a job hazard analysis. For CO readings above 25 ppm and above 1 ppm for H_2S, further assessment is required to determine the cause.

This checklist is not valid without all sections completed.

Competent Person _____ Date _____

Appendix A
Project Lockout/Tagout Procedure
(Hazardous Energy Control)

Appendix A
Project Lockout/Tagout Procedure
(Hazardous Energy Control)

1.0 Purpose

The purpose of the Lockout/Tagout (LOTO) Program is to establish the method by which LOTO and Permit to Work (PTW) functions will be administered. The intent of implementing this procedure is to avoid any hazardous release of energy that could threaten the health and safety of project personnel or damage equipment. Energy in this context includes, but is not limited to, electrical, thermal, hydraulic, pneumatic, chemical, and potential energy, such as that from elevated weights and compressed springs.

LOTO is required whenever construction, modification, testing, startup (commissioning), servicing, or maintenance is being performed on equipment or systems in which the unexpected energization, startup, or release of stored energy could cause injury to people or damage equipment.

2.0 Definitions

- Affected Employee--An Affected Employee is a person whose job requires him/her to work on a system or equipment for the purposes of construction, modification, testing, startup, servicing, or maintenance, and a LOTO is required to protect them from the hazardous release of energy, or whose job requires him/her to work in an area where such activities are being performed (all non-Authorized Tagging Authorities on the project site). Affected Employees can become holders of LOTOs once they sign onto a LOTO Holder Sign on Sheet (SAF-047), but this can only be done AFTER an Authorized Tagging Authority has signed onto that LOTO.
- Authorized Tagging Authority--An Authorized Tagging Authority is a Black & Veatch employee, or member of Black & Veatch Commissioning, who is authorized to request and implement a LOTO as directed by the applicable Tagging Manager. They will be the first person to sign onto a LOTO, and the last person to sign off a LOTO. This person must be trained and demonstrate understanding and competence in the execution of the LOTO and Permit to Work (PTW) programs (understanding and competence is demonstrated by passing a written test).
- Caution - System Under Test (SUT) Tags (yellow with black lettering)--This tag is used to identify major equipment or systems that have been turned over to the commissioning group for startup, testing and operation. Equipment may be started remotely or automatically (SAF-052).
- Crew--A group of workers (Affected Employees), under the direction of a person at Foreman level or above, who perform specific work (e.g., electrician, pipefitter, millwright, etc.).

- Danger - Do Not Operate (DNO) Tags (white with red and black lettering – OR – red with black and white lettering)--This tag is used to identify an isolation point and control the position or status of any energy isolating device (valve, breaker, etc.) required to ensure a safe lockout. These tags will have a unique number and must be accompanied by an appropriate locking or disabling device that renders an energy isolating device in-operable (SAF-044).
- Energy Isolating Device--An energy isolating device is a device that physically prevents the transmission or release of energy. Typical energy isolating devices are as follows:
  - A manually operated circuit breaker.
  - A disconnect switch.
  - A manual isolation valve.
  - A blank flange, slip blind, or any similar device used to physically block or isolate energy.
  - Physical separation (e.g., lifted leads, misaligned pipes).
- Holder--Any Affected Employee who is signed onto the LOTO Holder Sign on Sheet (SAF-047). By becoming a Holder, the Affected Employee ensures that the LOTO is maintained.
- Job Hazard Assessment (JHA)--A preliminary hazard analysis of work operations for their potential to cause injury, property damage, or both that outlines the sequence of the job, potential hazards of the job, and recommended actions, procedures, and/or equipment to eliminate the identified hazards (SAF-038).
- Locking Device--A device that facilitates the use of the lock. Typical lockout devices and their acceptable use are as follows:
  - Multi-Lock Device(s)--A device that accommodates more than one lock, such as a multi-lock hasp.
  - Electrical Distribution Panel Breaker Locking Device(s)--A panel board locking device affixed over the breaker or any other means of hazardous energy control that provides equal protection.
  - Physical Separation--Mechanical blind or method of physically separating or cordoning off a component or system.
  - Valve Locking Devices--Chains or specialized locking devices that prevent operation of manual valves.

- Lock--A device, used in conjunction with a locking device that uses positive means to hold an energy isolating device in the safe position (e.g., padlocks, heavy-duty tie wraps). All locks must be individually keyed and numbered.
- Lockout/Tagout (LOTO)--A LOTO can consist of one or more DNO isolations grouped by task. Each LOTO is given a unique identification number, and is generated in the LOTO Database.
- LOTO Coordinator--An Authorized Tagging Authority delegated by the Tagging Manager to perform all Tagging Manager tasks except for approving an Emergency Release. The LOTO Coordinator will maintain the LOTO Database, and LOTO Log Books, as well as, install Locking Devices and hang tags.
- LOTO Database--A computer program used to generate all DNO Tags and forms associated with each LOTO. This computer program is a database of all LOTOs created, and Authorized Tagging Authority information. It shall be maintained by the Tagging Manager/LOTO Coordinator.
- LOTO Holder Sign on Sheet--This is one of two forms generated by the LOTO Database. This form will directly follow the associated LOTO Isolation Device Form in the LOTO Log Book(s). An Authorized Tagging Authority MUST sign on this form to make a LOTO active. A person at Foreman level or above for any Crew or Affected Employee working under the protection of a LOTO MUST also sign on this form. Any Crew or Affected Employee working under the protection of a LOTO has the option to sign onto this form once a person at Foreman level or above for that Crew or Affected Employee has signed onto the LOTO Holder Sign on Sheet (SAF-047).
- LOTO Informational Displays--Signage or bulletin boards located throughout the site which identify tags and communicate general information regarding LOTO procedures.
- LOTO Isolation Device Form--This is one of two forms generated by the LOTO Database. This form will be placed directly in front of the LOTO Holder Sign on Sheet in the LOTO Log Book(s). This form contains a list of all individual DNO isolations associated with a LOTO, and may consist of multiple pages. An Authorized Tagging Authority must sign and date for each individual DNO isolation, as it is placed or removed (SAF-042).
- LOTO Log Book--A three ring binder containing all LOTO forms generated by the LOTO Database. The LOTO Log Book must contain a cover sheet indicating “LOTO Log Book”, volume number, project name, and the range of LOTO ID numbers contained in that volume. At the front of the LOTO Log Book will be the table of contents generated from the LOTO Database. This table of contents MUST be updated as new LOTOs are generated and/or existing LOTOs are closed out. Following the table of contents by order of LOTO ID Number, will be the LOTO Isolation Device Form (SAF-042) and LOTO Holder Sign on Sheet (SAF-047) for each LOTO.
- LOTO Request Form--This form is a tool that may be used by an Authorized Tagging Authority when requesting a LOTO (SAF-048).

- Permit to Work (PTW)--A work authorization that, at the discretion of the Tagging Manager, may be required to perform work on equipment, systems, or subsystems that have been turned over to Commissioning or Operations. It is required that painters, insulators and installers of handrails, grating and toe plates obtain a PTW (SAF-050). In addition, a Job Hazard Assessment (JHA) (SAF-038) is required by the responsible Commissioning Engineer and/or the Affected Employees.
- Personal Lock--A lock that is supplied by an individual employee that may be used to supplement the protection provided by the Lockout/Tagout Procedure.
- Tagging Manager--A manager level employee who has been assigned the responsibility for implementing the project LOTO and PTW programs. The Tagging Manager or designee is the person who approves PTWs, LOTOs, the hanging of SUT tags, determines if conditions are safe to perform work, and who has been trained in the applicable OSHA standards.

Note: The Tagging Manager may delegate all tasks of the LOTO procedure except for approving an Emergency Release.

Table A-1
Outline of Roles and Responsibilities

Stage	Tagging Manager	Authorized Tagging Authority	Notes
Construction	Construction Manager	LOTO Coordinator Discipline Superintendent General Foremen Discipline Foremen	• Construction is in control of equipment and systems. • Construction's system is used for LOTO.
Commissioning	Commissioning Manager	LOTO Coordinator Commissioning Engineer Commissioning System Client	• Commissioning has accepted items on a system basis. • System Under Test tags indicate items are in Commissioning phase. • Commissioning's system is used for LOTO.
Operations	Client's Operations Shift Supervisors	Client Personnel	• Operations have accepted control of system. • The Client's system is used for LOTO.

3.0 Training Requirements

Before a job requiring LOTO is performed, training and verification of knowledge as outlined below shall be completed to ensure that the purpose and function of the Lockout/Tagout Procedure are clearly understood by all field employees.

3.1 Training

Affected Employees shall be trained during project orientation, and the training shall cover the following areas:

- The purpose of the LOTO Program.
- The use and appearance of locks and tags.
- The potential hazards that locks and tags protect against.
- Potential hazards caused by failing to adhere to the LOTO Program.
- The penalties for removing locks and tags.
- Prohibitions against attempting to operate locked or tagged equipment.
- Recognition of hazardous energy sources.

Authorized Tagging Authorities are required to be trained in the following areas:

- The use of this procedure.
- Recognition of hazardous energy sources.
- Type and magnitude of hazardous energy present in workplace (potential danger).
- Method and means necessary for proper isolation and control.
- Proper use of the following forms:
  - LOTO Request Form (SAF-048).
  - Permit to Work (PTW) (SAF-050).
  - LOTO Isolation Device Form (SAF-042).
  - LOTO Holder Sign on Sheet (SAF-047).
  - Job Hazard Assessment (JHA) (SAF-038).
- Proper methods and sequencing for placing and removing LOTOs.
- Proper awareness of the need for additional permits (confined space entry, hot work permit), and establishment of these programs in accordance with the project safety manual.
- Closing out a Permit to Work (PTW).

Tagging Managers are required to be trained in the following areas:

- The use of this procedure.
- Recognition of hazardous energy sources.
- Type and magnitude of hazardous energy present in workplace (potential danger).
- Methods and means necessary for proper isolation and control.
- Proper use of the following forms:
  - LOTO Request Form (SAF-048).
  - Permit to Work (PTW) (SAF-050).
  - LOTO Isolation Device Form (SAF-042).
  - LOTO Holder Sign on Sheet (SAF-047).
  - Job Hazard Assessment (JHA) (SAF-038).
- Proper methods and sequencing for placing and removing LOTOs.
- Proper awareness of the need for additional permits (confined space entry, hot work permit) and establishment of these programs in accordance with the project safety manual.
- Closing out a Permit to Work (PTW).
- Considerations in determining if and when a requested work activity can be approved to proceed.
- Proper delegation of LOTO functions and follow-up to ensure that the program is implemented properly.

3.2 Retraining

Retraining will be provided for all Affected Employees and Authorized Tagging Authorities under the following conditions:

- When there is a change in the project LOTO Program.
- When there is a change in job assignment.
- When inadequacies in an employee's knowledge are identified.
- When deviations in the use of the LOTO Procedure are identified.
- When systems are turned over to the Client and the Client's LOTO Procedure is in place.

3.3 Training Documentation

The Site Safety Manager, or designated alternate, shall maintain a record of all Tagging Manager, LOTO Coordinator, Authorized Tagging Authority, and Affected Employee training efforts. A list of Authorized Tagging Authorities (SAF-041) will be maintained in the LOTO Database, and made available upon request. Employees shall receive hard hat stickers (SAF-046) to indicate their level of training.

4.0 Compliance

Failure to comply with the LOTO Procedure rules shall be considered just cause for discharge or removal of the persons involved from the project site.

Examples of failure to comply include the following:

- Operating or working on a system or piece of equipment without obtaining a proper LOTO and/or PTW.
- Operating or working on a system or piece of equipment in violation of the tags in place.
- Removing tags from a system or piece of equipment without proper authorization.

5.0 Procedure

5.1 Preparation

- When there is a need to order and obtain LOTO supplies the Commissioning Department will work to get new supplies made available. It is important to note that when ordering supplies, quantities are ordered on a project basis. As a project nears completion and finds that they have surplus LOTO supplies, the project will notify their Commissioning Support Manager. The Commissioning Support Manager will check with the various other projects in progress or scheduled to start, as to their needs for additional LOTO supplies. Where appropriate, the LOTO supplies will be shipped directly from one project to another, with the costs being covered by the projects. This is done to maximize the use of the LOTO supplies, and reduce project costs. If no projects have a current need for LOTO supplies, then the project nearing completion will ship the LOTO supplies back to the Home Office (P-Building) to the attention to the Commissioning Support Manager.
- Prepare LOTO Informational Displays to be located in prominent areas on the project site. The displays should include the purpose of LOTO, sample tags and a brief description of their uses, and consequences for failure to comply with procedures.

- Prepare LOTO Database. Populate the LOTO Database with the necessary project information. This includes the following:
  - Project Name on forms and reports.
  - Contact information for Authorized Tagging Authorities.
  - Equipment Data (Circuit Lists, Valve/Equipment List, Vendor Equipment).

5.2 General Rules

1. The Tagging Manager shall ensure implementation of the Lockout/Tagout (LOTO) Procedure.

2. All isolations shall be recorded on a LOTO specific to the requirements of that specific work task.

3. If a tag or tags are found either missing or lying on the ground, they are to be reported to the appropriate Authorized Tagging Authority A.S.A.P.! Employees must NOT assume they know where the tags are to be placed or try to replace them. Upon notification, the Tagging Manager and appropriate Authorized Tagging Authority shall immediately investigate and determine the status of the LOTO, whether the tag can be reattached, or if a work stoppage is necessary for personnel or equipment safety.

4. When construction work activities or modifications are required after a system has been turned over to the Commissioning group a Permit to Work (PTW) (SAF-050) shall be required to perform the work (refer to Section 8.0 of this Appendix A). The Tagging Manager has the authority to waive the need for a LOTO associated with the PTW for specific instances where the activity does not need a LOTO to render the equipment safe to work on. However, all PTWs shall be accompanied by a Job Hazard Assessment (JHA) (SAF-038).

5. When work is required in an electrical panel where it is not possible and/or feasible to de-energize all parts in the panel, the following shall be done:

   a. Only qualified personnel shall perform the work, and a Job Hazard Assessment (JHA) shall be completed before the work is performed (SAF-038).

   b. Temporary insulating and shielding shall be done unless the application of the shielding presents a greater hazard than the work.

   c. Place a RED barricade around the area of the panel so only the qualified personnel performing the work have access to the panel.

   d. Identify and use the appropriate Arch-Flash Personal Protective Equipment (PPE).

6. Personal Locks are allowed if all of the following conditions are met:

   a. An Authorized Tagging Authority has already obtained the LOTO for the energy isolating device to be locked, and there is an active DNO tag on that energy isolating device. ONLY after the owner of the personal lock has signed on to the LOTO Holder Sign on Sheet (SAF-047) for that energy isolating device can the owner of the personal lock hang their personal lock. *Personal locks placed on energy isolating devices without a LOTO currently in place or without signing on to the current LOTO are not allowed and are at risk of being removed by the Tagging Manager*.

   b. The lock is clearly marked with the employer, craft, individual's name, contact phone number or radio channel, and must contain a lock number. *Personal locks that do not meet these identification criteria are in violation of this procedure and are at risk of being removed by the Tagging Manager.*

   c. The lock is only to be applied while the individual is physically onsite, and signed on to the LOTO. *Personal Locks left in place when the individual is not onsite, or has signed off the LOTO are in violation of this procedure and are at risk of being removed by the Tagging Manager*.

5.3 Do Not Operate (DNO) Tag Rules

1. Each crew performing work that requires Hazardous Energy Control (HEC) shall obtain a LOTO at the appropriate energy isolating device(s) in accordance with this procedure. No crew shall perform work under another crew's LOTO without the Forman of that crew signing on the LOTO as a holder.

2. All LOTOs must be initiated by an Authorized Tagging Authority, who may complete the LOTO Request Form (SAF-048).

3. The Tagging Manager, LOTO Coordinator, or designated Authorized Tagging Authority can place DNO tags, locking devices, and locks. All Locks shall be individually keyed, and contain a unique lock number. This lock number shall be on the lock, the key for that lock, written in the space provided on the DNO tag using that lock, and on the LOTO Isolation Device Form (SAF-042) in the space provided. Circuit Breaker Locking Devices fit for the purpose shall be used for DNO Isolations in power panels. On smaller (120/208V Panels) with Circuit Breaker Locking Devices, a heavy-duty tie wrap or cable systems may be used in place of a keyed lock to affix the Do Not Operate tag to the Locking Device. If a tie wrap is used in place of a keyed lock, the words "tie wrap" shall be used in place of a lock number on the Do Not Operate tag (SAF-044), and LOTO Isolation Device Form (SAF-042).

4. All locking devices shall be accompanied by a Lock and DNO tag and must be traceable to the Holder(s) through the LOTO Log Books.

5. After the locking devices, DNO tags, and locks are placed, the Authorized Tagging Authority will sign the LOTO Isolation Device Form (SAF-042), indicating the position (open/close) of the Energy Isolating Device(s), and then sign and date the LOTO Holder Sign on Sheet (SAF-047) in the designated location as the Primary Holder.

6. Locking devices/locks not accompanied by a DNO tag, are at risk of being removed (refer to Section 7.0, Emergency Release Procedures, and Section 5.2, General Rules, of this Appendix A).

7. DNO tags (SAF-044) override any other tags present on a device. It means exactly what it says "Do Not Operate" the device. A System Under Test (SUT) tag (SAF-052) may be present on the same device at the same time a DNO tag is placed on the device; meaning the component is under the jurisdiction of the Commissioning Group and has been locked out for equipment or personnel protection.

8. LOTOs that consist of one or more DNO tags can have multiple Holders, *but only one Primary Holder, who is the Authorized Tagging Authority that requested the LOTO, and they are the first one to sign on the LOTO and the last one to sign off the LOTO.*

9. Only the Tagging Manager or LOTO Coordinator can authorize removal of DNO tags and locking devices upon the request of the Authorized Tagging Authority who initiated the LOTO.

10. Authorized Tagging Authorities can remove locks they applied as the Primary Holder after signing off the LOTO Holder Sign on Sheet (SAF-047), but FIRST must verify ALL other holders of the LOTO have signed off the LOTO Holder Sign on Sheet. After signing off the LOTO, the Authorized Tagging Authority MUST initial in the "Release OK" box next to each isolation being removed on the LOTO Isolation Device Form (SAF-042). Once the locks are removed, the Authorized Tagging Authority shall sign and date for each lock removed on the LOTO Isolation Device Form for that same LOTO.

11. Temporary Release - In certain cases, a piece of equipment currently on a LOTO may need to be tested/operated and then have the LOTO re-applied. In this case, a temporary release of the LOTO is allowed. The Authorized Tagging Authority will verify the need and readiness for a Temporary Release, and then have all other Holders of the LOTO sign off the LOTO Holder Sign on Sheet (SAF-047) for that LOTO. Once all other Holders of the LOTO have signed off, the Authorized Tagging Authority can sign off the LOTO Holders Sign on Sheet (SAF-047). The Authorized Tagging Authority can then remove the Locks and DNO Tags and the test / operation of the equipment can be completed. Once complete, the Authorized Tagging Authority can re-hang the Locks and DNO tags on the proper isolations, and verify the equipment is properly locked out. The Authorized Tagging Authority will then sign on a new LOTO Holder Sign on Sheet (SAF-047) for the same LOTO in the designated area, and place the new LOTO Holder Sign on Sheet in the LOTO Log book directly behind the original LOTO Holder Sign on Sheet for that LOTO. *The original LOTO Holder Sign on Sheet must clearly indicate "Temporary Release."* Refer to the LOTO Temporary Release Process Flow Chart (included at the end of this appendix) for an overview of the process.

12. Partial Release - In certain cases, the need to release part of a LOTO, and not all the DNO Isolations on that LOTO could arise. An example of this would be a LOTO that isolates all the lines coming off the ring header of an air system. As lines become complete, those isolations are no longer needed, and a partial release can be done to remove the Locks and DNO Tags on those specific isolation points. First, it must be verified by the Authorized Tagging Authority that all work is complete under the DNO isolation(s) to be released, and the equipment is ready. Then ALL other holders signed on the LOTO Holder Sign on Sheet (SAF-047) for that specific LOTO must sign off the LOTO, and then the Authorized Tagging Authority must sign off the LOTO Holder Sign on Sheet (SAF-047). Using the LOTO Isolation Device Form (SAF-042) for that LOTO, identify the key number(s) for the DNO Isolation(s) that will be released, and remove the Locks and DNO Tags from those isolations. Returning to the LOTO office with Locks and DNO Tags in hand, the Authorized Tagging Authority will sign and date the "Removed" portion of the LOTO Isolation Device Form (SAF-042) for the DNO Isolation(s) that were removed. Then, print a new LOTO Holder Sign on Sheet (SAF-047) for the LOTO, and the Authorized Tagging Authority will sign on the LOTO in the designated area, and indicate the DNO Isolations that remain in the "Isolation" field on the LOTO Holder Sign on Sheet (SAF-047) directly below their name. This new LOTO Holder Sign on Sheet will be placed in the LOTO Log book directly behind the original LOTO Holder Sign on Sheet for that LOTO. The original LOTO Holder Sign on Sheet must indicate "Partial Release" and clearly identify the DNO Isolations that were removed in that partial release. Refer to the LOTO Partial Release Process Flow Chart (included at the end of this appendix) for an overview of the process.

5.4 System Under Test (SUT) Tag Rules

1. A System Under Test (SUT) caution/informational tag (SAF-052) may be applied to the same Energy Isolating Device at the same time as a Do Not Operate (DNO) tag (SAF-044). *The DNO tags will always supersede the SUT tag.*

2. The Tagging Manager shall approve the installation of all SUT tags.

3. The Tagging Manager, LOTO Coordinator, or designated Authorized Tagging Authority/Commissioning Engineer can place SUT tags On a piece of equipment only after the Commissioning Manager has notified the Tagging Manager that the equipment has been accepted from Construction by Commissioning as part of a system/subsystem turnover package.

4. SUT tags must have the appropriate system information and Authorized Tagging Authority's/Commissioning Engineer's name on the tag.

5. SUT tags are generally used during Startup and Commissioning activities, but may also be used by Construction as advisories or measures of control for construction testing activities (hydro), if required. The tag must clearly be labeled "Construction Testing" and have the appropriate Authorized Tagging Authority's name written on the tag.

6. Power panel circuit breakers that receive a SUT tag shall be identified with a color-coded sticker affixed to the circuit breaker. The SUT tag shall contain the breaker number, and Tag ID for the piece of equipment energized by that circuit, as well as the name of the Authorized Tagging Authority associated with that equipment. The SUT tag shall be placed in a group attached to the power panel door.

6.0 Sequence

The sequence of a LOTO is explained in the steps below, but for an overview of this process, refer to the Lockout/Tagout Process Flow Chart (included at the end of this appendix). After a need is determined for LOTO, the following occurs:

1. The Authorized Tagging Authority requests a LOTO for a specific work activity (task) and may complete the LOTO Request Form (SAF-048).

2. The Tagging Manager or designee determines if it is safe to perform the planned work and verifies the conditions required to ensure the safety of personnel and equipment.

3. The Tagging Manager or LOTO Coordinator or Authorized Tagging Authority prepares the LOTO for implementation (i.e., creates LOTO in Database, issues DNO tags, locks and locking devices).

4. The Tagging Manager or LOTO Coordinator or Authorized Tagging Authority or Operations locates and operates Energy Isolating Devices to properly isolate hazardous energy from the area or equipment to be protected.

5. The Tagging Manager or LOTO Coordinator or Authorized Tagging Authority affixes Locking Devices, Locks, and DNO Tags to the Energy Isolating Devices, leaving means to release any stored energy left in the system.

6. The Tagging Manager or LOTO Coordinator or Authorized Tagging Authority or Operations releases any stored energy (by venting, draining, grounding, or ventilating), including release or securing of potential energy sources such as compressed springs and elevated weights, etc.

7. The Tagging Manager or LOTO Coordinator or Authorized Tagging Authority applies Locking Devices, Locks, and DNO Tags to the means used to release stored energy (if applicable).

8. The Tagging Manager or LOTO Coordinator or Authorized Tagging Authority verifies effectiveness of isolation (by visual inspection, voltage testing, attempt to operate, sniffer, etc.).

9. The Authorized Tagging Authority who requested the LOTO signs and dates the LOTO Isolation Device Form (SAF-042) indicating each lock has been placed, and signs and dates the LOTO Holder Sign on Sheet (SAF-047) as the Primary Holder.

10. The Foreman (or above) and Crew/Affected Employees are notified by the Authorized Tagging Authority of the LOTO and any special requirements for the work to be performed through completion of a Job Hazard Assessment (JHA) (SAF-038).

11. After the person at Foreman level or above for the Crew/Affected Employees has signed on the LOTO Holder Sign on Sheet (SAF-047) and signed the Job Hazard Assessment (JHA) (SAF-038), work may commence.

12. After the work is completed and the Authorized Tagging Authority has verified the condition of the area or equipment is properly restored (e.g., cleanliness, complete reassembly, etc.), and notified all Holders working under the LOTO that the LOTO will be released once they sign off the LOTO Holder Sign on Sheet (SAF-047), upon ALL other holders signing off, the Authorized Tagging Authority signs off the LOTO Holder Sign on Sheet as the Primary Holder.

13. The Authorized Tagging Authority removes the locks applied for the LOTO after the LOTO Holder Sign on Sheet (SAF-047) has been signed off, and the "Release Ok" box has been initialed for each isolation on the LOTO Isolation Device Form (SAF-042). The Authorized Tagging Authority shall inform the Tagging Manager or LOTO Coordinator that the LOTO is ready to be cleared. Once the locks have been removed, the Authorized Tagging Authority signs and dates the LOTO Isolation Device Form (SAF-042) for each of the locks removed.

14. The Tagging Manager or designee takes responsibility for ensuring that equipment and devices are in a safe condition (i.e., status of Energy Isolating Device is safe for the level of completion or status of the equipment – operational or otherwise).

Note: Certain types of equipment may have specific startup instructions from the manufacturer or that result from a process hazard analysis conducted under the provisions of 29 CFR 1910.119, Process Safety Management.

7.0 Emergency Release Procedures

Under extraordinary circumstances, it may be necessary to remove a Lock or Do Not Operate (DNO) tag (SAF-044) that has been affixed by someone else or without the proper signoff of a Holder. Only the Tagging Manager may authorize the removal of a Lock or DNO tag, and only in accordance with the following stipulations:

1. The Authorized Tagging Authority who is responsible for the Lock or DNO tag or a Holder of the LOTO is not present at the site, and all reasonable efforts have been taken to contact the responsible employee.

2. All measures are to be taken to notify the employee of the Emergency Release before he/she resumes work.

3. All Permits To Work (PTWs) (SAF-050) associated with the LOTO for which the affected Lock or DNO tag (or both) are associated with, must be withdrawn from the field and verified by the Tagging Manager that they are in the LOTO Office. All additional personnel not already signed off the LOTO must be notified that the LOTO

is being suspended and all work has been halted. The Tagging Manager, Authorized Tagging Authority responsible for the LOTO, and the Holder's Supervisor must walk down the work for which the LOTO was issued to confirm the work is completed and the LOTO can be cleared.

4. The Holder's supervisor will sign and date the LOTO Holder Sign on Sheet (SAF-047) as released alongside the Tagging Manager. *Additionally, the entry shall be labeled as an "Emergency Release."*

For an overview of the Emergency Release Procedure, refer to the LOTO Emergency Release Process Flow Chart (included at the end of this appendix).

8.0 Permit to Work (PTW)

8.1 Permit to Work (PTW) Determination

The Tagging Manager shall determine if a PTW (SAF-050) is required. The following circumstances shall require a PTW:

- When work is to be performed by anyone other than Commissioning on systems under the control of Commissioning.
- When work is to be performed by Commissioning on systems under the custody and control of Construction or Client Operations, except for required troubleshooting, problem solving, and optimization. The PTW process for the owner of that system/equipment shall be followed.

8.2 Permit to Work (PTW) Sequence

After the Tagging Manager determines a PTW is required, the following sequence occurs:

1. The Authorized Tagging Authority, or Supervisor in charge of the work completes the requester section of the PTW form (SAF-050) and submits it to the Tagging Manager or designee.

2. The Tagging Manager or designee reviews the PTW and reviews any required LOTOs. As well as identifies any additional hazards workers should be aware of in the work area, and hazards to equipment workers may create while performing the work (welding above cable trays).

3. The Tagging Manager or designee and the Safety Manager review the PTW and determine if any other permits are required to safely perform the work.

4. Procedures for the execution of additional permitting or planning requirements are defined in the Project Environmental, Safety, Health & Security (ESH&S) Manual and must be followed. Examples of other permits or plans which may be required are: confined space entry permit, hot work permit, and Job Hazard Assessment (JHA) (SAF-038).

5. After the Approval section of the PTW form is completely fill out and approved, and any other safety requirements are satisfied, a unique PTW number shall be assigned to the PTW form and a copy of it made. The original PTW form is given to the Authorized Tagging Authority or Supervisor requesting the PTW and serves as their work authorization. The copy of the PTW is placed in the PTW Log Book as a place holder until the original is returned.

6. The original PTW must either be in the possession of the person performing the work or in the vicinity of the work and accessible upon request by both workers and management.

7. After completion of the work, the Authorized Tagging Authority or Supervisor completes the Closure section of the PTW form signing the PTW as complete or incomplete and provides an explanation as to why the work was not completed (if required). The PTW is returned to the Tagging Manager or designee and is placed in the PTW Log Book, replacing the copy that was used as a place holder.

Referenced Documents:

SAF-038 Job Hazard Assessment (JHA)

SAF-041 Authorized Tagging Authority List

SAF-042 LOTO Isolation Device Form

SAF-044 Do Not Operate (DNO) Tag

SAF-046 Hard Hat Stickers

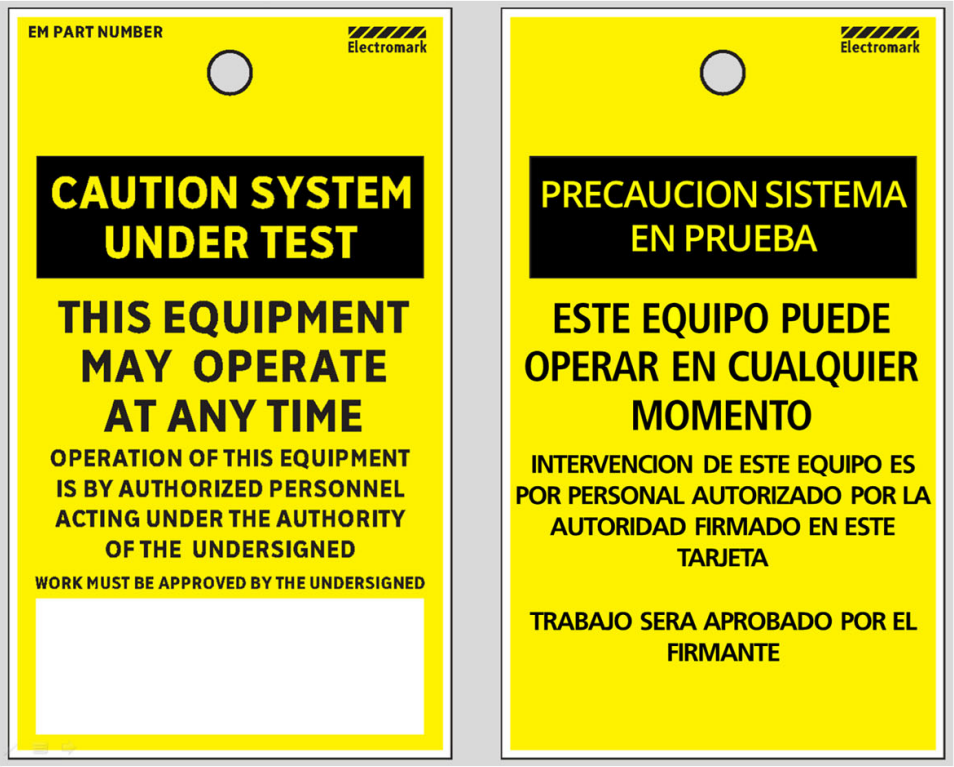
SAF-047 LOTO Holder Sign on Sheet

SAF-048 LOTO Request Form

SAF-050 Permit to Work (PTW)

SAF-052 System Under Test (SUT) Tag

LOCKOUT/TAGOUT – SYSTEM UNDER TEST (SUT) TAG



LOCKOUT/TAGOUT – DO NOT OPERATE (DNO) TAG

LOCKOUT/TAGOUT – AUTHORIZED TAGGING AUTHORITY LIST

Date Updated _____

Authorized Tagging Authorities			
Name	**Employer**	**Title**	**Phone Number**

Note: Add rows as required.

LOTO AUTHORIZED TAGGING AUTHORITY LIST IS GENERATED BY THE LOTO DATABASE

LOCKOUT/TAGOUT – ISOLATION DEVICE FORM

ID	PTW	Task	Open	Close	LOTO Remarks

Asset	Asset Description	SU Sys	System Description

Asset Remarks

ISOLATION LIST

ID - Lock	Position	Isolation	Description				Equip Supplied
	Iso Remarks		Placed By	Date Placed	Release OK	Removed By	Date Removed
355-							
	Verified by:		Date:				
355-							
	Verified by:		Date:				
355-							
	Verified by:		Date:				
355-							
	Verified by:		Date:				
355-							
	Verified by:		Date:				
355-							
	Verified by:		Date:				

LOTO ISOLATION DEVICE FORM IS GENERATED BY THE LOTO DATABASE

LOCKOUT/TAGOUT – HOLDER SIGN-ON SHEET

Fill in the second row as shown in the table below.

ID	PTW	Task	Open	Close	LOTO Remarks
76		AIN01 – Compressed Air Supply – Temp Tie In	10/22/2014		Isolation of temporary valve XKJ130055-02 for Air System

Authority Name	Company	Lock No.	Phone	Signature (Sign On)	Date (Sign On)	Signature (Sign Off)	Date (Sign Off)
Authorized Tagging Authority Acceptance: Authorized Tagging Authority indicates that the work group has read the permit and agrees to observe all safety requirements. Additionally, the Authorized Tagging Authority has walked down the area, verified placement of locks and tags, has gained an understanding of the hazards involved, and has verified zero energy state.							
Isolations							
Isolations							
Isolations							
Isolations							
Isolations							
Isolations							
Isolations							
Isolations							
Isolations							
Isolations							
Isolations							
Isolations							

LOTO HOLDER SIGN-ON SHEET IS GENERATED BY THE LOTO DATABASE

LOCKOUT/TAGOUT – JOB HAZARD ASSESSMENT

PREJOB SAFETY ANALYSIS

Job No. _____ JHA No. _____ New _____ Revised _____ Date _____

Site _____ Contractor _____ Analysis By _____

Project Manager _____ Superintendent _____ Revised By _____

Location _____ Approved By _____

Job Description _____

Sequence of Job	Potential Hazards	Recommended Action, Procedure, and/or Equipment

Craft Safety Representative _____

LOCKOUT/TAGOUT – PERMIT TO WORK

Project Name: Project Number: PTW No.

Request

Requested By _____ Contact No. _____ Date Requested _____

_____ _____ Time Requested _____

Signature Company

Expected Duration of Work: Date Needed _____

Time Needed _____

System (if applicable): Equipment Tag No. (if applicable):

Description of Work:

LOTO Required? ☐ Yes ☐ No

Other Permits Required?

Job Hazard Assessment (JHA): ☐ Yes ☐ No Welding, Cutting, and Heating: ☐ Yes ☐ No

Energized Electrical Work: ☐ Yes ☐ No Other: _____

Confined Space Entry: ☐ Yes ☐ No

Approval/Isolation/Issuance

Tagging Authority or Designee: Approved? ☐ Yes ☐ No

_____ _____ _____

Signature Date Time

Tagging Authority or Designee Comments:

LOTO ID _____ Marked Up Drawings Attached? ☐ Yes ☐ No

LOTO Completed By _____ PTW Issued To _____

_____ _____

Signature Signature

_____ _____ _____ _____

Date Time Date Time

Sign-off

Actual Work Completed? ☐ Yes ☐ No

Comments:

Reason for PTW Satisfied? ☐ Yes ☐ No Lockout and Tagout Still Required? ☐ Yes ☐ No

Comments:

PTW Signed Off By _____ LOTO Removed? ☐ Yes ☐ No

Isolation Closed? ☐ Yes ☐ No

_____ _____

Requester Signature Approver Signature

_____ _____ _____ _____

Date Time Date Time

LOCKOUT/TAGOUT REQUEST

Project Name _____ Unit No. _____ Date Requested _____

Project Location _____ Date Needed _____

System/Equipment Tag _____ Requested By _____

REASON FOR LOTO

Item	Equipment Tag	Position	Equipment Tag Description

Authorized Tagging Authority Approval _____ Date _____

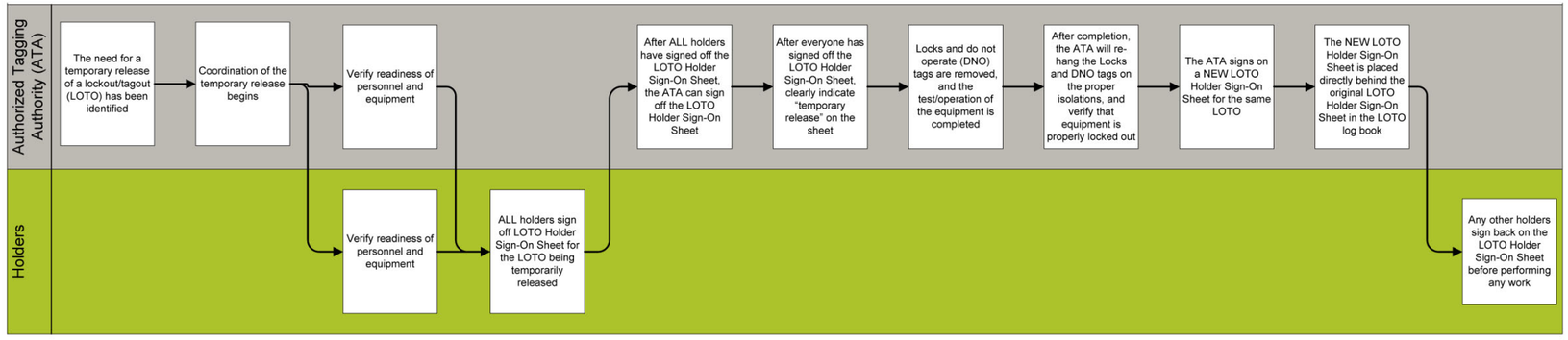
LOCKOUT/TAGOUT – HARD HAT STICKERS

Affected Employee

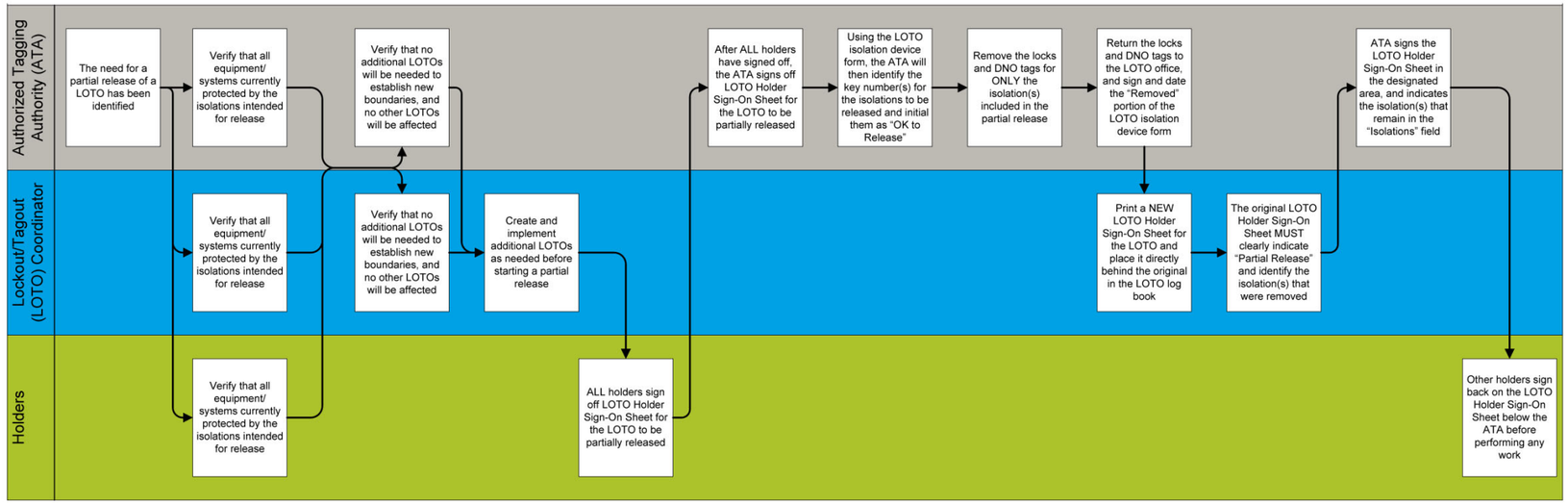
Authorized Tagging Authority

Process Flow Charts

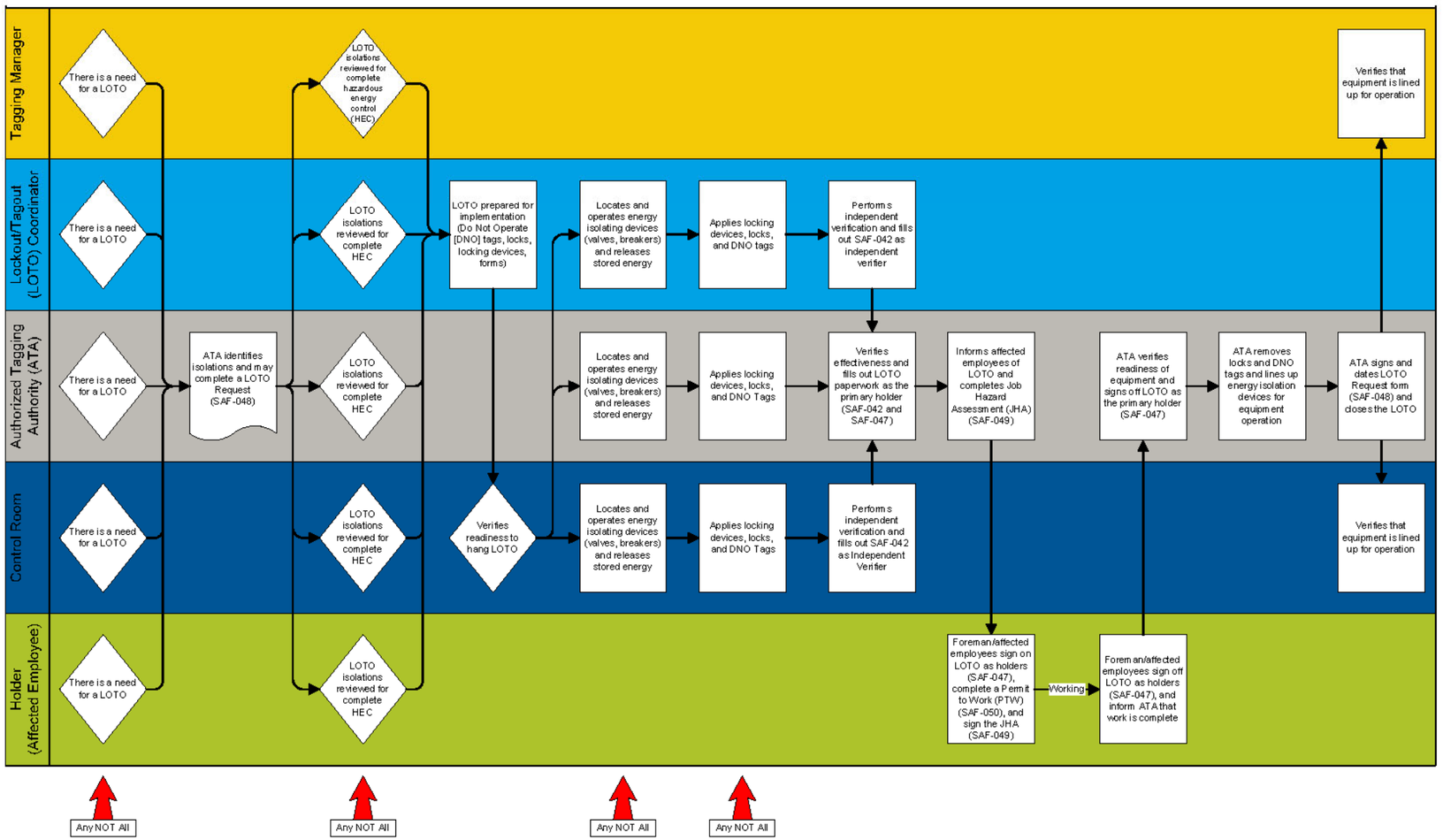
LOCKOUT/TAGOUT – TEMPORARY RELEASE PROCESS FLOW



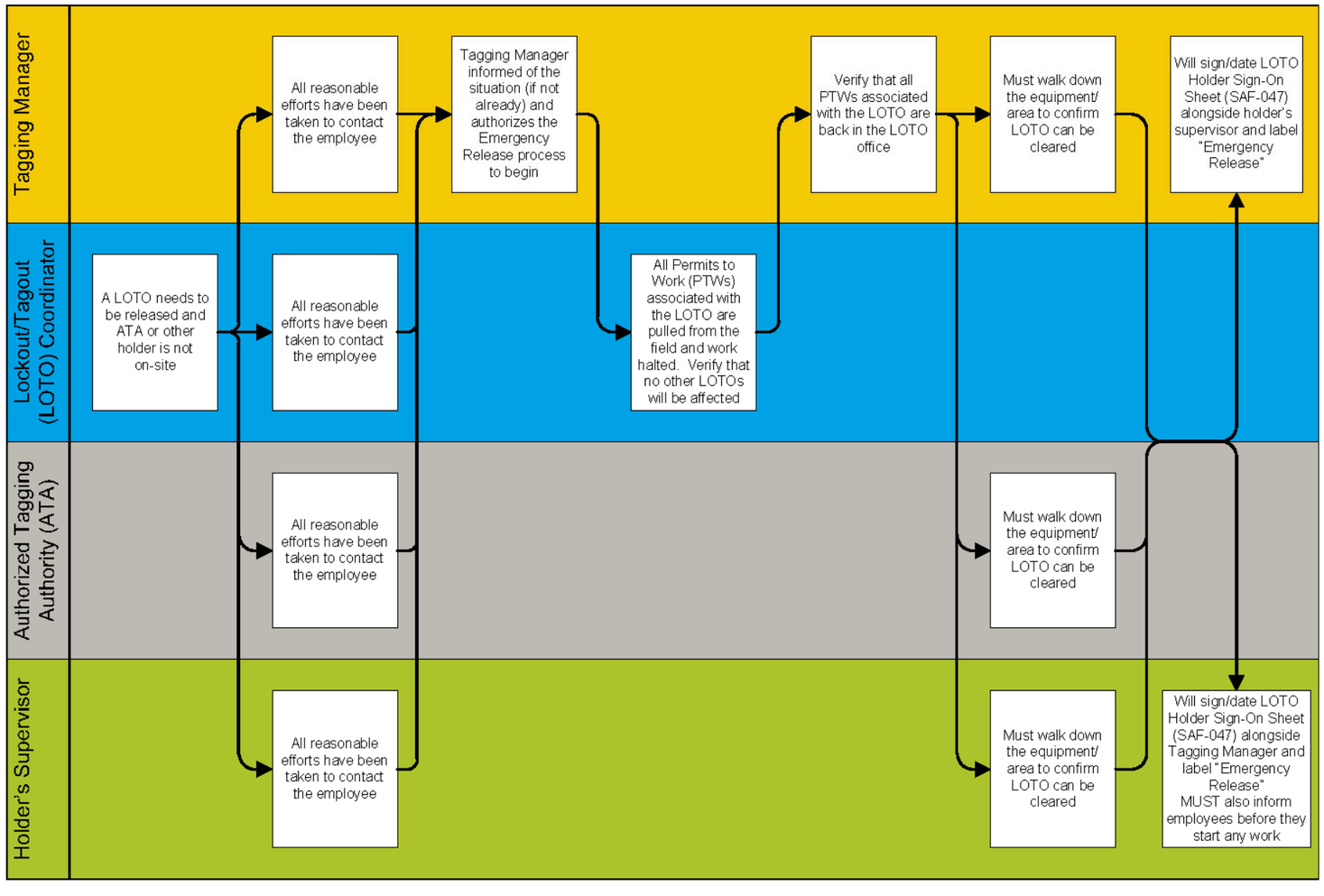
LOCKOUT/TAGOUT – PARTIAL RELEASE PROCESS FLOW



LOCKOUT/TAGOUT – PROCESS FLOW



LOCKOUT/TAGOUT – EMERGENCY RELEASE PROCESS FLOW



Appendix B
Cranes and Derricks Procedure

Appendix B
Cranes and Derricks Procedure

1.0 Purpose

The purpose of this procedure is to prevent workplace incidents that could result in personal harm or loss of personal, property, limb, or life. This procedure provides instructions for risk assessment and selection and implementation of controls to mitigate risk for routine and non-routine activities and foreseeable emergencies.

If there is a conflict between the directives of this procedure and any manufacturer's requirements and/or local requirements or regulations, the more stringent regulation shall apply.

The directives in this procedure pertain to all personnel and equipment involved in hoisting operations on projects or sites whether company owned or under contractual requirements.

Operators and those who supervise or oversee lifting and hoisting operations are required to review the procedure prior to mobilization and complete and return the Cranes and Derricks Acknowledgment Card (SAF-158) to the Environmental, Safety, Health & Security (ESH&S) Manager.

2.0 Scope

This procedure applies to all employees (staff, craft, contingents and contractors) at any time during the course of their work at any workplace.

This procedure applies to all employees unless they are working under a separate safety program approved by the business's Environmental, Safety, Health & Security (ESH&S) Manager.

The deviation authority of this procedure is the Director of ESH&S.

3.0 Responsibilities and Authorities

Director of ESH&S is the owner of this procedure. Comments and suggested improvements to this procedure must be forwarded to the process owner.

Any exceptions to this procedure shall be submitted and approved in writing to the Director of ESH&S.

3.1 Responsibilities and Qualifications

Project Leadership

The project leadership exercises supervisory control over the work site on which a crane is being used and over the work that is being performed on that site.

Responsible for securing the Federal Aviation Administration (FAA) permit for the permanent building structure and ensuring that third-party hoisting vendors coordinate for their temporary structure FAA permits.

Responsible for coordinating all street/lane closures with the appropriate agencies and coordinating with local police to provide street/lane closure support.

Responsible for ensuring that all key personnel are trained for their roles, operators and supervision receive and sign the Acknowledgment Card (SAF-158), and documents are filed onsite.

Responsible for ensuring applicable documentation is provided by all subcontractors regarding their employees who will be performing hoisting work. This shall include operators, riggers, signal persons, oilers/spotters, mechanics/technicians, and Assembly/Disassembly directors.

Responsible for ensuring that crane operator has proper credentials/certifications (NCCCO or local requirements) and evaluations (SAF-129) are performed before operators are assigned work.

Superintendent

The superintendent manages and directs daily use of hoisting equipment and is responsible for proper usage, maintenance, and safety of the hoisting equipment while on the jobsite including ensuring annual and monthly crane inspections are performed as required.

The superintendent is responsible for scheduling crane or hoist delivery along with associated accessories and provisions including rigging, mats, temporary road, or other items required for safe crane operations. The superintendent shall review these requirements with the Project Field Manager (PFM).

The superintendent shall provide technical assistance to the rigger in preparation of critical lifts.

The superintendent shall ensure company policy regarding critical lift planning is being adhered to by crews under his/her direction. The superintendent shall review the Critical Lift Plan and review the plan with the CM/PFM. The superintendent, with the lift director, shall conduct and document pre-lift briefings with members of the rigging crew, the operator, and other affected parties prior to lifting operations. During this briefing, the superintendent shall identify the specific risks identified, the task(s) to be accomplished, and responsibilities of the crew. The superintendent is responsible for ensuring that the assigned company ESH&S representative is present at the briefings and as appropriate during the lifting operations.

The superintendent shall schedule time each day to allow the operator to accomplish all required equipment inspections and maintenance activities and any other pre-start checklist requirements.

The superintendent shall ensure all cranes under his/her direction are equipped with a Daily Lift Plan Book (SAF-088) and shall inspect the assigned books weekly to ensure proper utilization in aiding crews with safe hoisting operations.

The superintendent shall coordinate inspections of all rigging and hardware in accordance with the company Rigging procedure for identification, wear, and/or damage prior to each use. The superintendent is responsible for ensuring that damaged or excessively worn rigging is destroyed and reported for inventory purposes.

The superintendent shall ensure that the crews under his/her direction are trained in this procedure, competent, and have the proper tools and equipment.

The superintendent shall review applicable subcontractor rigging and lifting packages and specially designed lifting devices.

Foreman

The foreman is responsible for ensuring that rigging procedures are in compliance with company and local regulatory requirements and standard crane signals are posted and utilized.

The foreman shall ensure rigging is inspected monthly and daily before use for noncompliance or damaged components. Monthly inspections will be documented.

The foreman shall notify the superintendent prior to any lifts on abnormal/hazardous conditions identified including load limits, rigging, site conditions, site interference, or any issue that may affect safe hoisting

Lift Director

The lift director is the competent and qualified person who oversees the work being performed by the crane and the associated rigging crew. The operator and the lift director may be the same person.

The lift director is responsible for ensuring that the ESH&S representative is notified of upcoming critical lifts. The lift director shall be present at the pre-lift meetings as well as during the lift.

Assembly/Disassembly Director

The assembly/disassembly (A/D) director is responsible for coordinating on-site erection, dismantling, or jacking operations for tower cranes and for assembly and disassembly of mobile cranes.

The A/D director is responsible for requesting all pertinent site-specific rules, regulations, laws, or governing policies or procedures specific to the project, site location, or facility in which the crane assembly/disassembly/reconfiguration are to be performed.

Crane Operator

Any employee or personnel tasked with operating a crane with a lifting capacity of 2,000 US pounds or more who directly controls the crane's functions.

All crane operators shall be trained through an accredited apprenticeship program, technical school, government entity, employee training program, or verified previous employer.

All crane operators shall be certified through an accredited agency or government body. Crane operators must hold a current and valid certification for the designated type of crane to which they are assigned in addition to the required local medical evaluation card recognized by the location they are operating, or any other certifications as required by law.

If a project's location requires a crane operator to hold a current license for that location in addition to the certifications according to this procedure, any crane operator performing work on that project must possess a valid license in accordance with that municipal/governmental code or legal requirement.

Crane operators shall be evaluated by a competent person according to crane type. The competent person shall be deemed by project leadership and coordinated with the Black & Veatch CEFS Cranes and Rigging Specialty Group.

Oiler/Operator in Training (OIT)

Crane operators in training shall have passed the written NCCCO, or equivalent, test on the crane they are learning or have a valid certification (NCCCO or equivalent) in accordance with the crane type to which they are assigned. The OIT must also have any required medical evaluation card or other certifications as required by law or requirement.

Oilers/Operators in Training shall be permitted to operate cranes under the direct supervision of the operator or designated trainer if granted permission from the Lift Director. The operator may perform no other task during the time the oiler/operator in training is performing crane operations.

Oilers/Operators in Training are strictly prohibited from operating cranes during any critical lifts.

Signal Person

The signal person is responsible for ensuring that proper hand signals and radio communications are provided to the operator and must have constant communication with the operator.

All signal personnel shall be trained by their employers or through an accredited apprenticeship program, technical school, government entity, employee training program, or verified previous employer program.

All signal personnel shall be evaluated by supervision to ensure competency levels are adequate to perform rigging tasks. Personnel who demonstrate a lack of adequate skills to safely perform work may be required to complete additional training, be reassigned, or dismissed of signal duties.

The signal person shall not have any other responsibilities when providing hand or radio communication to the operator.

Crane Technician/Mechanic

Technicians shall adhere to all manufacturer's recommendations.

The mobile crane technicians shall communicate all necessary repairs to project leadership.

Any technician performing an annual inspection on a crane must be competent with a certification from an OSHA accredited agency or governing body.

Technicians shall remain clear of all moving machinery when in the blind spot of the operator's direct view. If the technician must position themselves in the blind spot, a spotter may be utilized to relay communication.

Any individual performing maintenance or repairs to a mobile or stationary crane must ensure that they do not put themselves in a situation where stored energy will cause harm to themselves or associated crew members.

Functional testing shall only be performed when the operator and technician are in direct communication with one another via spoken word, radio, or hand signals

4.0 Process/Instructions

4.1 Hazard Assessment

Any time employees are at risk from their work or work environment, the employee's supervisor must assess the hazards in accordance with the Hazard Assessment procedure, select means and methods to effectively control the risk, and train employees in the effective execution of these controls before work begins and when changes occur that may increase the risk to employees.

The hazard assessment must be documented (Job Hazard Assessment and Safety Task Assignment) and made readily available to the affected employee(s) and supervisor(s) in accordance with the Hazard Assessment procedure.

Hazard assessments shall be reviewed and discussed at/during daily lift meetings and critical lift meetings before hoisting operations begin or resume.

4.2 Procedures

4.2.1 Requirements

Prior to any hoisting operations taking place on a company project site, diligent planning and preparation shall be performed, in accordance with this procedure, to ensure the safety of employees, clients, on-site contractors, the public, property, the environment, and equipment. Guidelines shall be adhered to set forth by this procedure and regulations from OSHA, ASME, external clients and local regulations.

Project leadership must appoint a site supervisor to manage and direct daily use of hoisting equipment and is responsible for proper usage, maintenance, and safety of the hoisting equipment while on the jobsite including ensuring annual and monthly crane inspections are performed as required.

All hoisting equipment with a capacity of 2,000 pounds (US) or greater shall require trained, certified, qualified operators.

The load moment indicator or anti-two block override shall not be used to extend past the crane's chart capacity for lifts.

Overrides shall only be used in assembly and disassembly of cranes in accordance with manufacturers recommendation and shall only be used under direct supervision of A/D director or Competent person during assembly and disassembly of cranes. Overrides shall only be used when there is fault in the onboard computer that cause the crane to stop functioning and under direct supervision by the onsite competent person. Crane override will not be used during any lifts.

All installations and operations, including cranes and derricks, shall comply with the manufacturer's recommendations or engineer's specifications, rated load capacity, specifications, and limitations applicable to installation, operation, maintenance, inspection, and testing of all cranes, derricks, cableways, and other hoisting equipment.

"Danger Tagging" procedures must be followed to identify the status of the piece of equipment.

Complete and legible equipment operations manuals, maintenance instructions, etc., must be reviewed by the operator and available in each piece of equipment.

Cranes and hoisting equipment must never be loaded over the manufacturers rated capacities. Rated load capacities, operating speeds, special warnings, and all other information required by the manufacturer, professional engineer, company requirements, or any applicable law must be posted where clearly visible to the operator(s) of the hoisting equipment. Load charts must be serial number specific and correspond with the serial number of the hoist or crane to which they are assigned.

A qualified signal person shall be provided for hoisting operations.

All hoisting equipment with hoist drums must maintain (at minimum) three full wraps of hoist line on the drum at all times.

Employees are not permitted to ride loads, blocks, buckets, hooks, other type of devices attached to the hoist lines, booms, or attachments of any crane, derrick, or mechanical hoist.

All mechanical hoists must be equipped with a braking system capable of stopping and holding any load within the manufacturer's load chart, taking into account effective weight of working conditions.

The operator must not leave the controls while a load is suspended unless approved by the project management and must follow local regulations

Tag lines shall be utilized at all times except when tag line use could pose a greater hazard.

Tag lines shall be free of knots or tied hitch configurations that could become easily snagged or tangled.

Tag lines shall never be attached to other equipment or vehicles when needed to pull the load unless used when tied back to the hoisting device when traveling.

At no time shall any crane maintenance or housekeeping duties be performed where moving, rotating, or mechanical devices pose a hazard. Such maintenance and repairs shall be performed at a time when the crane is not actively performing work. Operators may assign cleaning and greasing if the work area is free of crushing, entanglement, falling, and associated hazards.

The crane operator or supervisor are responsible for stopping any hoisting operation deemed unsafe due to load capacity, obstructions, weather, or maintenance issues. The operator is the final authority for any lift.

All participants are responsible for stopping any hoisting operation deemed unsafe due to load capacity, obstructions, weather, or maintenance issues. All involved persons have Stop Work Authority.

4.2.2 Modifications

Modifications, additions, or repairs that affect the structural competence, capacity, or safe operation of the equipment or system are prohibited unless manufacturer's written approval is obtained.

Cranes and hoisting equipment that have undergone modifications (alterations, , or additions) that affect the safe operation of the equipment (involving a safety device or operational aid, critical component, power plant, braking system, load-sustaining structural components, load hook, or in-use operating mechanism) or the equipment's capacity must be and inspected by a qualified person after such modifications/additions have been completed, prior to initial use.

After modifications, additions, or repairs are completed, the equipment must be inspected, performance tested, and load capacities revised if appropriate to reflect any modifications.

4.2.3 Site Conditions

Blocking or matting underneath outriggers are required with the following specifications:

- Constructed to be 3x the float at a minimum – additional area of contact may be needed due to ground conditions.
- Made of hardwood, poly mats, steel, etc.
- Hardwood blocking shall not have any gaps (span blocking)
- Never placed blocking underneath outrigger beams.

When outriggers or crawler cranes are on concrete slabs, they require matting underneath and must have approval from the engineer or SME on adequate strength of concrete.

A crane movement plan shall be created for the walking of cranes. A crane study and soil analysis for allowable ground bearing pressures (GBP), track pressures, weather considerations, and matting requirements shall be verified by engineering or by the Black & Veatch CEFS Cranes and Rigging Specialty group.

4.2.4 Safe Clearances

Adequate clearance must be maintained between moving and rotating parts of a crane and other fixed objects to prevent collisions with people, equipment, and objects or a spotter shall be utilized.

All mobile cranes shall have tail-swing radius barricaded to prevent intrusion of equipment, personnel, automobiles, or other objects that may foul the tail-swing path. Appropriate tagging procedures shall be followed.

Swing radius barricades must be in place at all times while crane is in operation.

Barricades shall be utilized when necessary to visibly mark the controlled access zone to prevent unauthorized personnel from entering the lifting zone.

4.2.5 Assembly/Disassembly

A mandatory meeting shall be held by site supervision for cranes that require at least one freight/truck load in addition to the crane chassis/body. This meeting shall include the A/D director, superintendent, ESH&S, PFM and/or CM. The meeting shall be utilized to discuss the safety aspects; identify hazards, site logistics, and permitting; designate personnel; and identify any site requirements or permitting needed to ensure safe and proficient assembly.

Manufacturer's instructions/procedures must be followed when assembling or disassembling cranes, attachments, or other hoisting equipment.

Fall protection shall be utilized when assembly or disassembly requires activities at or above 6 feet from the ground.

Fixed jib attachments on cranes shall be installed and/or removed and stowed under the direction of a mechanic or an experienced certified crane operator.

Luffing jibs, tower attachments, multiple section jibs, etc., shall be installed, removed, or stowed under the direction of an A/D director and according to manufacturer recommendations.

Post-assembly inspections (initial inspection) shall be performed by the A/D director or a competent person such as a qualified technician to ensure that the crane or equipment has been assembled in accordance with the manufacturer's requirements before operation commences.

A copy of the initial inspection shall be provided to site management for review and filing.

Cranes shall be assembled on graded and firm ground in conjunction (if necessary) with the use of supporting materials. The equipment manufacturers specifications shall be followed for adequate support and degree of level.

Third-party mobile cranes brought onto a project site as an assist crane for assembly/disassembly support shall be approved by the project prior to arriving on-site. The third-party vendor shall provide ESH&S with a current annual inspection along with associated operator and support personnel credentials and any test lift documentation (where applicable) to ensure support cranes are safe and in good operating condition.

4.2.6 Inspections and Documentation

All cranes and hoists, unless otherwise stated, must be inspected according to local regulations and this procedure. All inspections shall be documented and filed on-site.

The operator has the primary responsibility for performing daily maintenance and inspection of the equipment under their control and for completing all inspection reports (SAF-014 [Daily] and SAF-015 [Monthly]) in a legible and complete manner.

The operator shall immediately notify the superintendent, project leadership, or site management regarding any issue with daily maintenance or inspections that may jeopardize the safe operation of the equipment or safety of the personnel. In those cases, the equipment will be taken out of service. Corrective action must be taken prior to placing the unit back into service.

4.2.6.1 Daily/Shift Inspection

Crane and hoisting equipment shall be thoroughly visually inspected before use each day and at the start of the shift. The inspection shall be documented on the Crane Daily Inspection form (SAF-014). The operator/oiler shall be provided ample time to adequately perform the inspection process.

In addition to the items on the daily inspection form, the following shall be checked:

- Safety devices and operational aids for proper operation.
- The equipment for level position within the tolerances specified by the manufacturer's recommendations, both before each shift and after each move and setup.
- Ground conditions around the equipment for proper support, including ground settling under and around outriggers/stabilizers and supporting foundations, ground water accumulation, or similar conditions.
- Rails, rail stops, rail clamps, and supporting surfaces when the equipment has rail traveling.

If any deficiency is identified, an immediate determination must be made by the competent person as to whether the deficiency constitutes a safety hazard. If the deficiency is determined to constitute a safety hazard, the equipment must be taken out of service until it has been corrected.

4.2.6.2 Monthly Inspection

Each month a thorough inspection that includes all daily inspection (SAF014) criteria shall be performed and documented. The company monthly inspection form (SAF-015) shall be utilized and must be signed and dated by the employee performing the inspection. This monthly inspection form shall be provided to on-site ESH&S professionals or site supervision to be filed and stored for a minimum of 3 months.

4.2.6.3 Annual Inspection

Any crane or mechanized equipment with a primary design function to provide hoisting shall have or receive a valid annual inspection and meet the minimum criteria mentioned in this procedure along with meeting all regulatory requirements before being placed into service on Black & Veatch and its affiliated construction entity's projects.

Annual inspections shall only be performed by an accredited, licensed crane inspector. Any deficiencies noted during inspection that could affect the safe operation of the crane should be corrected before the crane is put into service. The inspection must include functional testing to determine that the equipment, as configured in the inspection, is functioning properly. Annual inspections shall be documented, maintained, and retained for a minimum of 12 months in project files.

Equipment that has been idle for 3 months or more shall be inspected utilizing the monthly inspection form (SAF-015) prior to reuse.

Any manufacturer's procedure regarding inspections that relate to safe operation that is more comprehensive or has a more frequent schedule of inspection than the requirements of this procedure must be followed. All documents produced under this section must be available to all personnel who conduct inspections under this procedure during the applicable retention period.

4.2.6.4 Severe Service/Post Accident/Incident

Any hoisting equipment subjected to the probability of damage or excessive wear including, but not limited to, the following:

- Overload
- Shock load
- Severe stress
- Lightning strike
- Corrosive environment
- Other environment enforcements or actions that could damage the crane or electronics

The crane shall be removed from service until inspected by a competent person such as a licensed inspector, qualified mechanic, or crane subject matter expert.

4.3 Lift Classifications

All hoisting operations shall be classified into two classifications: non-critical lift or critical lift.

Associated lift plans for each lift shall correspond with the classification of the lift.

- The maximum daily non-critical lift shall be documented on the Daily Lift Plan (SAF-088).
- All critical lifts shall be planned using the Critical Lift Worksheet (SAF-086).

4.3.1 Critical Lifts

A critical lift is a nonroutine lift/pick that by classification, characteristics and Black & Veatch policy requires in-depth and additional planning to ensure safe hoisting execution.

All lifts that reach 85 percent of crane capacity or greater shall be sent for review and approved by the BV Crane Specialty group.

Lifts shall not be allowed if the lifting device reaches 90 percent of the manufacturer's rated capacity. Deviations must be approved by the Director of ESH&S.

A critical lift plan shall be developed prior to making a lift when at least one or more of the following criteria is present:

- Any lift that reaches 75 percent of the hoisting equipment's rated capacity.
- Any lift in excess of 25 tons, (50,000 pounds).
- Any lift requiring the use of more than one piece of hoisting equipment including single crane lifts that utilize two hoist drums to manipulate a load.

- Any lift or crane that is within 20 feet of an energized power line.
- Any lift over an occupied building (not applicable during building construction).
- Any lift over moving capital equipment.
- Any lift that involves hoisting personnel.
- Any lift in which the hoisting equipment encroaches on highways, roadways, or railroad rights-of-way, unless the corridor is shut down to traffic.
- Any lift where payloads are required to swing directly over or under energized power lines.
- Helicopter lifts over Federal Aviation Administration defined congested areas.
- Any lift that the crane operator or lift director deems critical.

For additional information on rigger responsibilities or rigging requirements, see the Black & Veatch Rigging procedure.

4.3.2 Critical Lift Worksheet

The Critical Lift Worksheet (SAF-086) shall be used in critical lift planning. Any lift that meets the critical lift requirements must complete the comprehensive plan to minimize risk of crane failure or prevent catastrophic loss.

In addition to the Critical Lift Worksheet (SAF-086), it is recommended that a plan view drawing, to scale and dimensioned, shall be used indicating location of the following (3D lift plan or CAD based drawings are preferred):

- The hoisting equipment in relation to the payload pick site/location and set location.
- Any aboveground or underground utilities, buildings, or other obstacles, interferences, etc.
- Swing or travel path of boom.
- Hoisting equipment mat and outrigger locations.
- An elevation view sketch, to scale, indicating hoist between the boom and the payload and the boom and any obstructions, such as buildings.
- Drawing of the rigging arrangement.

A description of the payload may include the following:

- Description and location of the rigging attachment points.
- Payload weight, including weight of any attachments.
- Payload dimensions.

Other special considerations shall be noted, such as the following:

- The effects of the wind.
- Soil or ground bearing considerations.
- Rigging calculations.
- Other special precautions.

4.3.3 Pre-Lift Meeting

A pre-lift meeting must be held before any critical lift. The superintendent, with the lift director, shall conduct and document pre-lift briefings with members of the rigging crew, the operator, and other affected parties prior to lifting operations. During this briefing, the superintendent shall identify the specific risks identified, the task(s) to be accomplished, and responsibilities of the crew. The ESH&S representative must be present at the briefings and as appropriate during the lifting operations.

4.3.4 Non-Critical Lift (General Lifts)

A non-critical lift can be described as a routine lift or any lift that does not meet any criteria of the critical lift policy.

Non-critical lifts shall still be planned and documented utilizing the Daily Lift Plan (SAF-088).

4.3.5 Daily Lift Plan

For each crane placed into service on company projects the operator shall be required to complete a Daily Lift Plan. The plan/book shall be placed in the crane and remain in the cab for lift planning purposes. The Daily Lift Plan Book contains forms and instructions on how it is to be utilized along with helpful charts and references to aid in safe hoisting operations.

The work crew involved in the operation shall complete the daily lift plan. Participants may include; crane operator, oiler, spotter, riggers, signal person, lift director, ground personnel, etc.

The daily lift plan shall be completed by the operator and based on the crane's current work location and the lift of highest load chart percentage according to the crane's configuration.

The daily lift plan shall be filled out at the work site after careful consideration and identification of all hazards associated with the lifts. The lift plan shall be stored in the cab of the crane to which it has been assigned. The supervisor shall review the daily lift plan.

Should conditions change such as projected weights, location, or additional hazards, the daily lift plan shall be completed, and a new plan filled out to ensure proper planning is being performed for all lifts.

Daily Lift Plan Books are available from CEFS or can be created by printing the form (SAF-088).

4.3.6 Personnel Hoisting and Lifts

The use of equipment to hoist personnel **is prohibited** except where the site manager (PFM) or Project Manager (PM) is able to justify that erection, use, and dismantling of conventional means of reaching the work area, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform, or scaffold, would be more hazardous, or is not possible because of the project's structural design or worksite conditions.

The personnel lift platform section of the critical lift plan (SAF-086) must be completed for any personnel lift. The form must be submitted and approved a minimum of 48 hours in advance and must include approval from the PFM/CM and Business Unit ESH&S Manager or designee. Justification must be provided on why other means of access cannot be used.

4.3.6.1 Equipment Set-Up

The equipment must be uniformly level, within 1 percent of level grade, and located on footing that a qualified person has determined to be sufficiently firm and stable.

Equipment with outriggers or stabilizers must have them all extended and locked. The amount of extension must be the same for all outriggers and stabilizers and in accordance with manufacturer procedures and load charts.

4.3.6.2 Equipment Criteria

During the use of suspended personnel platforms or boom attached platforms, the total load (with the platform loaded including the hook, load line and rigging) must not exceed 50 percent of the rated capacity for the radius and configuration of the equipment, except during proof testing.

When the occupied personnel platform is in a stationary working position, the load and boom hoist brakes, swing brakes, and operator actuated secondary braking and locking features (such as pawls or dogs) or automatic secondary brakes must be engaged.

4.3.6.3 Devices

Equipment (except for derricks and articulating cranes) with a variable angle boom must be equipped with all of the following:

- A boom angle indicator, readily visible to the operator.
- A boom hoist limiting device.
- Articulating cranes must be equipped with a properly functioning automatic overload protection device.

Equipment with a luffing jib must be equipped with the following:

- A jib angle indicator, readily visible to the operator.
- A jib hoist limiting device.
- Anti-two block.
- Controlled load lowering.

- Free fall of the load line hoist is prohibited.
- Direct attachment of a personnel platform to a luffing jib is prohibited.
- The personnel platform must not be loaded in excess of its rated capacity.

4.3.6.4 Use of Personnel Platform

Personnel platforms must be used only for employees, their tools, and the materials necessary to do their work. Platforms must not be used to hoist materials or tools when not hoisting personnel.

The personnel platform must be designed for this intended purpose and be engineered and have sufficient capacity.

Platform must have an identification plate that states:

- Manufacturer.
- Date of manufacture.
- Platform capacity/rating.
- Weight of empty platform.
- Weight of platform with test weight.
- Have certificate of compliance.

If required by local law, be inspected and certified as appropriate.

4.3.6.5 Attachment and Rigging of a Personnel Platform

Hooks used in the connection between the hoist line and the personnel platform (including hooks on overhaul ball assemblies, lower load blocks, bridle legs, or other attachment assemblies or components) must be as follows:

- Of a type that can be closed and locked, eliminating the throat opening.
- Closed and locked when attached.

Shackles used in place of hooks must be of the alloy anchor type with either of the following:

- A bolt, nut, and retaining pin in place.
- Of the screw type, with the screw pin secured from accidental removal.

When a wire rope bridle is used to suspend the personnel platform, each bridle leg must be connected to a master link or shackle in a manner that ensures that the load is evenly divided among the bridle legs.

Rigging hardware (including wire rope, shackles, rings, master links, and other rigging hardware) and hooks must be capable of supporting, without failure, at least five times the maximum intended load applied or transmitted to that component. Where rotation resistant rope is used, the slings must be capable of supporting without failure at least ten times the maximum intended load.

Eyes in wire rope slings must be fabricated with thimbles.

Bridles and associated rigging for suspending the personnel platform must be used only for the platform and the necessary employees, their tools and materials necessary to do their work. The bridles and associated rigging must not have been used for any purpose other than hoisting personnel.

4.3.6.6 Trial Lift and Inspection

A trial lift with the unoccupied personnel platform loaded at least to the anticipated lift weight must be made from ground level, or any other location where employees will enter the platform, to each location at which the platform is to be hoisted and positioned. Where there is more than one location to be reached from a single setup position, either individual trial lifts for each location, or a single trial lift, in which the platform is moved sequentially to each location, must be performed; the method selected must be the same as the method that will be used to hoist the personnel.

The trial lift must be performed immediately prior to each shift in which personnel will be hoisted. In addition, the trial lift must be repeated prior to hoisting employees in each of the following circumstances:

- The equipment is moved and set up in a new location or returned to a previously used location.
- The lift route is changed, unless the competent person determines that the new route presents no new factors affecting safety.

The competent person must determine that the following apply:

- Safety devices and operational aids required by this section are activated and functioning properly.
- Nothing interferes with the equipment or the personnel platform in the course of the trial lift.
- The lift will not exceed 50 percent of the equipment's rated capacity at any time during the lift.
- The load radius to be used during the lift has been accurately determined.

Immediately after the trial lift, the competent person must accomplish the following:

- Conduct a visual inspection of the equipment, base support or ground, and personnel platform, to determine whether the trial lift has exposed any defect or problem or produced any adverse effect.
- Confirm that, upon the completion of the trial lift process, the test weight has been removed.
- Immediately prior to each lift, the platform must be hoisted a few inches with the personnel and materials/tools on board and inspected by a competent person to ensure that it is secure and properly balanced.

- The following conditions must be determined to exist by a competent person before the lift of personnel proceeds:
- Hoist ropes must be free of deficiencies.
- Multiple part lines must not be twisted around each other.
- The primary attachment must be centered over the platform.
- If the load rope is slack, the hoisting system must be inspected to ensure that all ropes are properly seated on drums and in sheaves.

Any condition found during the trial lift and subsequent inspection(s) that fails to meet a requirement of this procedure or otherwise creates a safety hazard must be corrected before hoisting personnel.

4.3.6.7 Proof Testing

At each jobsite, prior to hoisting employees on the personnel platform, and after any repair or modification, the platform and rigging must be proof tested to 125 percent of the platform's rated capacity. The proof test may be done concurrently with the trial lift.

The platform must be lowered by controlled load lowering, braked, and held in a suspended position for a minimum of 5 minutes with the test load evenly distributed on the platform.

4.3.6.8 Platform Occupants

The following applies to platform occupants:

- Keep all parts of the body inside the platform during raising, lowering, and horizontal movement. This provision does not apply to an occupant of the platform when necessary to position the platform or while performing the duties of a signal person.
- Not stand, sit on, or work from the top or intermediate rail or toeboard, or use any other means/device to raise their working height.
- Not pull the platform out of plumb in relation to the hoisting equipment.
- Before employees exit or enter a hoisted personnel platform that is not landed, the platform must be secured to the structure where the work is to be performed.
- If the platform is tied to the structure, the operator must not move the platform until the operator receives confirmation that it is freely suspended.
- Tag lines must be used when necessary to control the platform.

4.3.6.9 Platforms without Controls

Where the platform is not equipped with controls, the equipment operator must remain at the equipment controls, on site, and in view of the equipment, at all times while the platform is occupied.

4.3.6.10 Platforms with Controls

Where the platform is equipped with controls, all of the following must be met at all times while the platform is occupied:

- The occupant using the controls in the platform must be a qualified person with respect to their use, including the safe limitations of the equipment and hazards associated with its operation.
- The equipment operator must be at a set of equipment controls that include boom and swing functions of the equipment and must be on-site and in view of the equipment.
- The platform operating manual must be in the platform or on the equipment.

4.3.6.11 Environmental Conditions When Hoisting Personnel

When wind speed (sustained or gusts) exceeds 20 mph at the personnel platform, a qualified person must determine if, in light of the wind conditions, it is not safe to lift personnel. If it is not, the lifting operation must not begin or, if already in progress, must be terminated.

Hoisting of personnel shall not be conducted when storms with the potential for hail/strong wind gusts or lightning are within 30 miles in any direction.

4.3.6.12 Fall Protection

Employees occupying the personnel platform must be provided and use a personal fall arrest system. The system must be attached to a structural member within the personnel platform.

Must follow manufacturers requirements for anchorage points with fall protection.

Hoisting of personnel while the equipment is traveling is prohibited.

4.3.6.13 Hoisting Personnel Near Power Lines

Hoisting personnel within 25 feet of a power line that is up to 350 kV, and hoisting personnel within 50 feet of a power line that is over 350 kV, is prohibited, unless proper planning and approvals have been obtained from PFM and ESH&S Managers.

4.3.6.14 Pre-Lift Meeting

A pre-lift meeting must be as follows:

- Held to review the applicable requirements of the procedures that will be followed.
- Attended by the equipment operator, signal person (if used for the lift), personnel to be hoisted, and the person responsible for the task to be performed.
- Held prior to the trial lift at each new work location and must be repeated for any personnel newly assigned to the operation.
- A pre-lift meeting is required for all critical lifts.

4.4 Working Near Energized Power Lines

When crane or derrick work is to be performed near energized power lines, the competent person must:

- Identify the proximity to the lines.
- Verify the voltage.
- Determine the safe approach distance.

Safe Approach Distance

Voltage	Distance
0-350 kV	20 feet
350 –1000* kV	50 feet
* For voltages over 1000 kV, a professional registered engineer or utility owner/operator must establish the minimum safe approach distance.	

In any lifting operation where the crane's maximum working radius (within one boom length), load line, or load is determined to be within the safe approach distance of an energized power line, the following additional precautions must be taken:

- The safe approach distance must be physically demarcated by cones, safety ribbon, rope, barrels, or available high visibility objects to serve as a landmark to the crane operator and associated crew.
- A dedicated spotter will be appointed to inform the operator if any part of the crane, load, attachment or taglines approach within 20 feet of the safe approach distance.
- If hoisting directly above or below energized power lines, the lift must follow the critical lift requirements and equipment must be provided with an electrical ground.
- Ensure that no part of the equipment, load line, or load get closer than the minimum safe clearance per the chart below (must be followed in addition to grounding).

4.4.1 Minimum safe clearance shall be adhered to at all times

Power Line Voltage	Minimum Safe Clearance (Feet)
50 kV or below	10
200 kV - 350 kV	20
350 kV - 500 kV	25
500 kV - 750 kV	35
750 kV – 1,000 kV	45
See Addendum A for process flow chart.	

4.4.2 Cranes Near Transmitters

When a crane is operated near a radio, television, or microwave transmitter, the crane boom, load line, and load can become electrically charged.

Grounding the load block to the boom by using a spring-loaded reed and ground wire and earth grounding the carrier unit should dissipate the charge.

Solutions include the use of a synthetic web sling or an insulating becket between the crane's load block and the load or synthetic hoist cable.

Under no circumstances should anyone be allowed to enter the perimeter cable, fence, or barrier around the base of an operational transmitter.

4.5 Standard Mobile Crane Signals

4.5.1 Hand Signals

Hand signals shall be posted conspicuously at the jobsite.

Crane signals shall only be performed by qualified personnel.

Communication between the crane operator and the signal person shall be maintained continuously during all crane movements.

If at any time communication is disrupted, the operator shall stop all crane movements until communication is restored and a proper signal is clearly communicated.

If the operator has concern regarding the requested movement of the crane, the operator shall stop all crane movement until the operator and signal person agree the issue at hand has been resolved.

The operator must recognize signals from only one person designated as the signal person. Except for emergency stop.

Two-way radios and/or hand signals are the primary source of communication between the crane operator and rigging and signaling personnel.

See Addendum B for Hand Signal Chart.

4.5.2 Audible Radio (Voice) Signals

Audible radio signals shall be performed by a trained and qualified person.

Prior to beginning operations, the operator and signal person must contact each other and agree on the voice signals that will be used.

Two-way radios utilized for signaling cranes shall be of approved type. A designated channel shall be assigned for crane and rigging communications.

If multiple cranes are utilizing radio signaling within close proximity, each crane shall be designated to a certain channel unless previously planned for the purpose of tandem lifting.

A spare (charged) battery shall be readily available for the operator and signal person before the start of work each shift.

Each voice signal must contain the following five elements, given in the following order:

- Function (such as hoist, boom, etc.)
- Direction
- Distance and/or speed
- Function
- Stop command

The operator and signal person must be able to effectively communicate in the language used.

Example of correct voice signals include the following:

- Swing left 50 feet, 25 feet, 15 feet, 10 feet, 5 feet, 2 feet, swing stop.
- Lower load 100 feet, 50 feet, 30 feet, 15 feet, 10 feet, 5 feet, 3 feet, 2 feet, lower stop

4.6 Pile Driving

Cranes used to drive or extract piling must conform to the requirements and standards set forth in this procedure and local regulations.

The width of hulls for floating pile drivers must not be less than 45 percent of the height of the lead above water. The operating deck must be protected to prevent suspended piling from swinging or drifting in over the deck.

Pile driver hoist drums must not be equipped with grips or latches that automatically disengage by relieving the load or by rotating the drum.

Chains or wire rope shall not be shortened with knots, bolts, or other makeshift devices.

Hanging or swinging leads must have fixed ladders for access. Employees must use personal fall arrest equipment when working on the leads and must not remain on the leads or ladders when piling is being driven.

Fixed ladders or stairways must be installed for access to landings and headblocks.

Adequate guy lines, outriggers, thrust boards, counterbalances, or rail clamps must be used to stabilize pile drivers during operation.

When the pile driver is being moved, the hammer must be lowered to the bottom of the leads.

Piling must be hoisted by means of a closed shackle or similar positive means of attachment of the loadline, and employees must be kept in the clear. Taglines must be used to control unguided piles and “flying hammers.”

Extractors must be used to pull piling that cannot be pulled without exceeding the safety load rating of the pulling rig. When pulling piling, the crane boom must not be elevated over 60 degrees from the horizontal.

When driving jacked piles, excavation for access pits must conform to the requirements of the Excavations procedure.

5.0 Definitions

Anti two-block: A device that automatically prevents damage and load failure from contact between the load block, overhaul ball, or similar component, and the boom tip (or fixed upper block or similar component) must be used. The device(s) must prevent such damage/failure at all points where two-blocking could occur.

Controlled load lowering: The load line hoist drum must have a system, other than the load line hoist brake, that regulates the lowering rate of speed of the hoist mechanism. This system or device must be used when hoisting personnel.

6.0 Records

6.1 Records, Permits, Forms, and Checklists

An ongoing list of all records, permits, forms, and checklists must be kept using the following table. Records, permits, forms, and checklists must be hyperlinked to the source document. Those management reports that must be tied into a higher level governance document must be specifically identified.

Title	Description
Crane Daily Inspection (SAF-014)	
Crane Monthly Inspection (SAF-015)	
Critical Lift Worksheet (SAF-086)	
Daily Lift Plan (SAF-088)	
Overhead Crane Pre-Operational Checklist (SAF-126)	
Crane Operator Evaluation (SAF-129)	
Acknowledgement Card (SAF-158)	

6.2 Recordkeeping

All crane operator certifications, operator evaluations, crane and rigging annual inspections, critical lift plans, and pertinent hoisting documentation must be maintained at the project site for use by the project team, ESH&S and crane planning personnel.

6.3 Submittals

An ongoing list of all submittals must be kept. Those management reports that must be tied into a higher level governance document must be specifically identified.

Name	From	To	Submittal Deadline	Description
None.				

7.0 References

Title
ASME B30.1 Jacks, Industrial Rollers, Air Casters, and Hydraulic Gantries
ASME 30.2 Overhead and Gantry Cranes
ANSI B30.3, Tower Cranes
ANSI B30.4, Portal and Pedestal Cranes
ASME 30.5 Mobile and Locomotive Cranes
ASME 30.7 Winches
ASME 30.8 Floating Cranes and Floating Derricks
ANSI B30.11, Monorails and Underhung Cranes
29 CFR 1926 Subpart CC

8.0 Appendices (Mandatory)

Appendix A – Safe Clearance Flow Chart

Appendix B – Hand Signal Chart

Appendix C - Crawler, Locomotive, Truck and Wheel-Mounted Cranes

Appendix D - Portal, Tower, and Pillar Cranes

Appendix E - Overhead, Gantry, Monorail, and Underhung Cranes

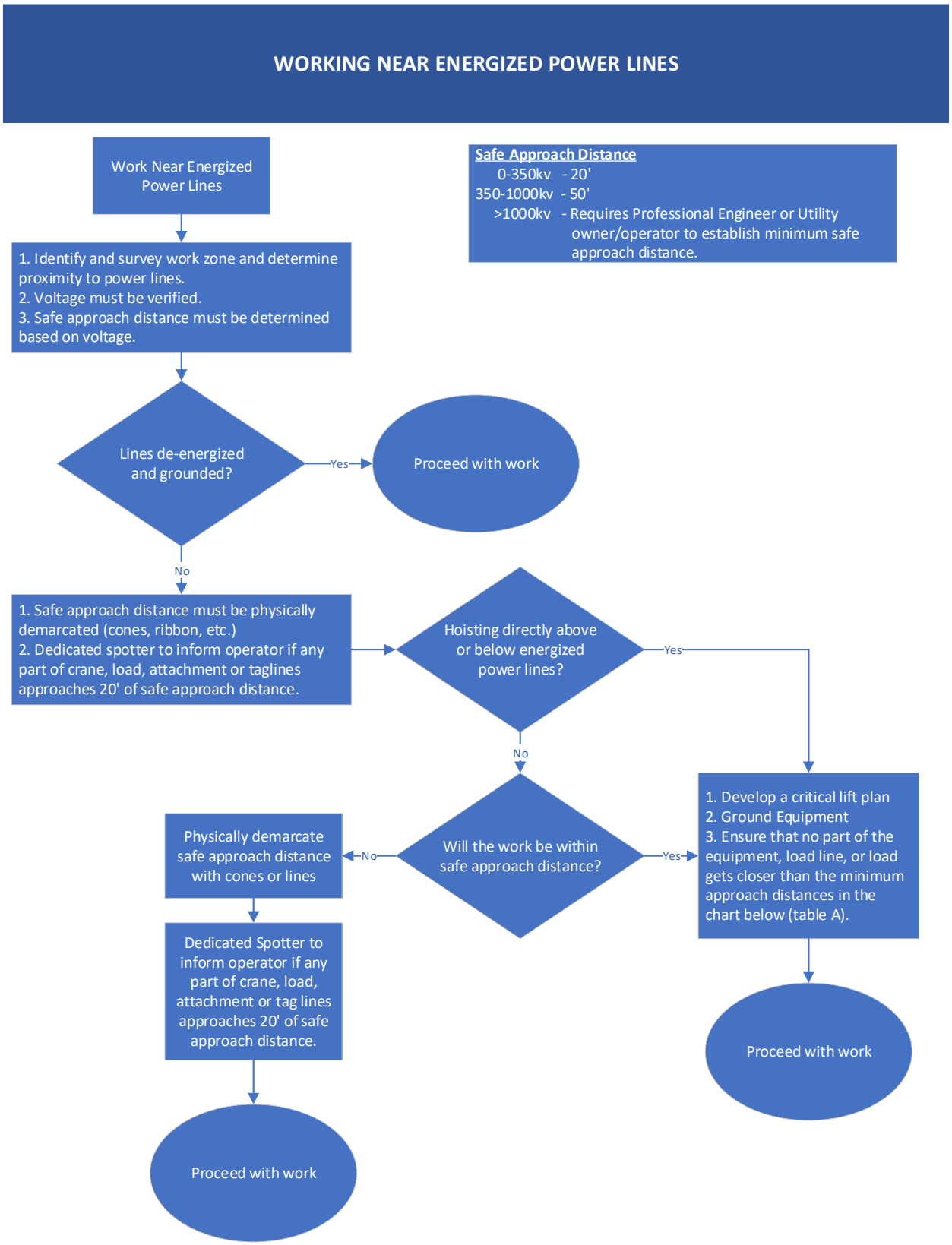
9.0 Training

Crane Awareness training – BV orientation, Construction 10 Hour, and Field Safety.

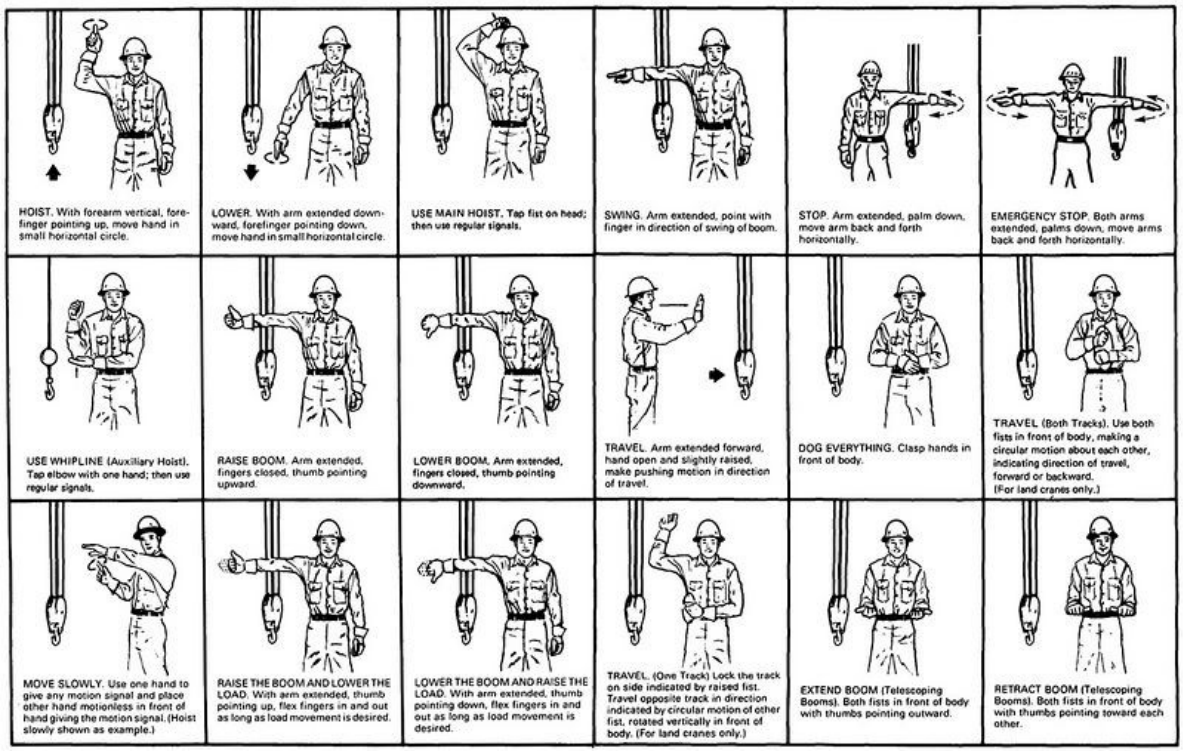
10.0 Revisions and Updates

Type of Change	Date of Change	Scope of Change
Editorial	18-AUG-2021	Language modified for global applicability. Content moved to Rigging, Material Handling, and Capstan procedures. Ground Conditions added. Flowchart detailing precautions near electrical lines added. Critical Lift criteria- 25 US long tons changed to 25 tons (50,000 lbs) Critical lift plans reaching 85% capacity must be reviewed by CEFS Crane and Rigging Specialty Group for approval.

Appendix A – Safe Working Distance Flow Chart



Appendix B – Hand Signal Chart



Appendix C – Crawler, Locomotive, and Wheel Mounted Cranes

In addition to the requirements discussed in this procedure, crawler, locomotive, truck, and wheel-mounted cranes must conform to the standards in the current edition of ANSI B30.5.

Operators – Only designated personnel shall be permitted to operate a crane covered by this section.

Boom Angle Indicator – Crawler, locomotive, truck, and wheel-mounted cranes must be equipped with a boom angle or radius indicator located within the operator's view.

Level Indicator – Means must be provided for the operator to visually determine the levelness of the crane.

Jib Stops – In addition to boom stops, jibs must have a positive stop installed to prevent overtopping.

Cab Windows – Windows installed in crane cabs must be safety glass or equivalent that introduces no visibility distortion that will interfere with the safe operation of the crane.

Audible Warning Device – Power cranes must be equipped with an audible warning signal device that can be heard above the usual construction noise levels.

Backup Alarm – An audible alarm, meeting requirements of the Mechanized Equipment procedure, must be installed on all crawler, truck, and wheel-mounted cranes.

Securing Booms – When not in use, crane booms shall be secured to prevent displacement by wind or other outside forces. Luffing jibs, tower attachments, and auxiliary boom extensions shall be tethered, lowered to the ground, or at a sufficient angle if left unattended for a long duration.

Fire Extinguisher – A carbon dioxide, dry chemical, or equivalent fire extinguisher shall be kept in the cab or vicinity of the crane.

Appendix D – Portal, Tower, and Pillar Cranes

Requirements

In addition to the requirements listed in this procedure, portal, tower, and pillar cranes must conform to the applicable standards in the current edition of ANSI B30.4, Portal and Pedestal Cranes, and ANSI B30.3, Tower Cranes.

Design

Crane installation and equipment must be designed by the manufacturer and a professional engineer competent in the field.

Operating Cabs

The operator's cab of a tower crane, either tower mounted or remote from the tower, must meet the following minimum requirements:

- Vision – The cab must be designed and constructed to provide the operator a clear and unrestricted view of the load and boom point and as clear a view of the jobsite as possible.
- Windows – The windows must be constructed of safety glass or equivalent and designed to provide ventilation. Paper, cardboard, or other material must not be used as a sunblock if it restricts the operator's vision in any fashion.
- Lock – The cab must be equipped with a lock to prevent unauthorized entry unless the control unit can be separately locked.
- Access – The cab must be provided with a means of safe access for the operator. All walking surfaces to and from the cab must be of an anti-slip type and protected with guardrails.
- Wiper and Defroster – The windshield must be equipped with a windshield wiper and, in cold climates, a heater and defroster installed in the cab.
- Fire Extinguisher – The cab must be provided with a unit fire extinguisher rated 2A40B:C, at a minimum.

Operating Controls

All controls must be deadman type that automatically return to neutral when released.

Each control must be plainly marked to indicate its function and within easy reach of the operator.

The main switch must be lockable and within reach of the operator.

Brakes

All brakes on the crane must be designed so that the brake will be automatically applied when there is loss of power and cannot be released until power has been restored.

The brake on the slewing drive must be designed so that the jib will weather vane when the wind pressure exceeds the pressure specified by the manufacturer.

Boom Stops

Luffing boom tower cranes must be equipped with a shock absorbing boom stop of a type that disengages the boom hoist motor and physically stops the boom at a predetermined maximum angle.

Limit Switches

Tower cranes of every configuration must be equipped with limit switches described as follows:

- A hook height limit switch that causes the hoist drum to stop whenever the load hook reaches a predetermined maximum height below the head block.
- Trolley limit switches that stop the trolley motion whenever the trolley reaches a predetermined “out” or maximum “in” position.
- An overload limit switch that causes the hoist drum to stop whenever the load being hoisted exceeds the maximum rated load for any radius or boom angle or whenever the overturning moment exceeds the rated load moment.

Boom Angle Indicator

A boom angle indicator must be installed on all machines having booms capable of moving in the vertical plane.

Audible Warning

Tower cranes must have an audible warning device controlled by the operator.

Maintenance Access

Safety lines with runners for attachment of full body harness and lanyards must be fitted to tower crane jibs and safety platforms must be installed on the trolleys of saddle jibs to afford safe inspection and maintenance.

Trolley Radius Markers

Trolley radius markers clearly visible from the cab must be installed on the jib.

Inspections

Portal, tower, and pillar cranes; installations; and equipment must be inspected in accordance with the more stringent requirements of the manufacturer, ANSI B30.4, and ANSI B30.3, as applicable.

Appendix E – Overhead, Gantry, Monorail, and Underhung Cranes

Overhead and gantry cranes must conform to the requirements in the current edition of ANSI B30.2, Overhead and Gantry Cranes, and monorails and underhung cranes must conform to the requirements in the current edition of ANSI B30.11, Monorails and Underhung Cranes. The Overhead Crane/Hoist Pre-Operational Checklist (SAF-126) shall be completed prior to use.

Design

Crane installations and equipment must be designed by the manufacturer or a professional engineer competent in the field.

Crane Access

- Safe access to the cab or bridge walkway must be provided by a fixed ladder, stairs, or platform with no step over gaps exceeding 12 inches.
- Fixed ladders and stairways must be in compliance with the requirements in the Ladders procedure and the Stairways procedure.

Platforms and Walkways

- Maintenance platforms and walkways, protected by standard guardrails and toeboards, and with a means of safe access, must be installed on the trolley and bridge.
- Where it is impractical to install platforms and walkways, safety lines with runners for attachment of personal fall arrest equipment must be installed to afford safe inspection and maintenance.

Limit Switches and Rail Stops

Rail-mounted cranes, trolleys, and bridges must be equipped with both switches and rail stops or buffers at each end of the tracks.

Rail Sweeps

Track-mounted cranes, bridges, and trolleys must be equipped with rail sweeps that extend below the top of the rail and are effective in all directions of travel.

Audible Alarm

Except for floor-operated cranes, a gong or other effective audible warning signal must be installed on cranes with power-traveling mechanisms.

Hook Limit Switch

A hook height limit switch that causes the hoist drum to stop whenever the load hook reaches a predetermined maximum height below the headlock must be installed on overhead and gantry cranes.

Operating Controls

- All controls must be deadman type that automatically return to neutral when released.
- Each control must be plainly marked to indicate its function.
- A main power switch capable of being locked in the open position must be within reach of the operator.

Brakes

All brakes must be designed so that the brake will be automatically applied when there is a loss of power and cannot be released until power has been restored.

Fire Extinguisher

A fire extinguisher of 2A40B:C rating or greater must be mounted in the cab.

Inspections

Overhead and gantry, monorail, and underhung cranes must be inspected using (SAF-126) and in accordance with the manufacturer's recommendations or inspection forms.