Pacific Gas & Electric
Embarcadero to Potrero 230kV
Transmission Project
(ZA-1)

LOSS CONTROL
MANUAL

BLACK & VEATCH
Building a world of difference.®

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Contents

1.0 General Safety

1.1 Pacific Gas & Electric Co. (ZA-1) Project Loss Control Program

1.1.1 Introduction

This Project Loss Control Program provides an administrative structure within which subcontractors 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 subcontractors 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 subcontractors' individual programs; monitoring of subcontractors' conformance with their individual programs, the Project Loss Control Program, and the ZA-1 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. Note: The requirements set forth in this manual are to be passed down to all Contractors' lower tier subcontractors.

1.1.2 Project Loss Control Program Elements

The Project Loss Control Program includes the following major elements:

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

- Weekly construction coordination meetings that subcontractors are required to attend.

- Monthly loss control reports.

1.1.3 Project Loss Control Program Administration

Black & Veatch Construction, Inc. (BVCI), shall administer the Project Loss Control Program and shall have such authority as described in this Project Loss Control Program Manual.

1.2 Subcontractor'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 subcontractor of his/her contract responsibilities for safety, health, security, and environment, or for complying with any applicable governmental regulations.

Subcontractor shall appoint a qualified and experienced Safety and Health (S&H) Representative who maintains a current certification from the Board of Certified Safety Professionals. This Representative shall be appointed as the lead Safety and Health (S&H) Representative for the Subcontractor and shall have no other duties and shall be assigned fulltime to the Jobsite. The Safety and Health (S&H) Representative shall functionally report to the Corporate Safety and Health Director. This requirement shall apply continuously during the entire contract period and shall not be limited just to normal working hours. Subcontractors shall be responsible for implementation of a written Loss Control Program (Subcontractors' 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. Subcontractors' conformance with the requirement to initiate and maintain such a program is mandatory under the provisions of their construction contract.

Subcontractors safety representative will be responsible for the administration of the Subcontractors' Loss Control Programs, the Project Loss Control Program, and the ZA-1 Project Environmental, Health, and Safety (EHS) requirements. Subcontractors shall also be responsible for the administration of the Subcontractors' Loss Control Programs and the Project Loss Control Program for their subcontractors.

1.2.2 Program Requirements

Subcontractors' 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 meet the minimum requirements of the Project Loss Control

Program, the following additional requirements shall be a mandatory part of each Subcontractor's Loss Control Program:

- Deliver one copy of the Subcontractor's Loss Control Program to the BVCI Loss Control Manager and the ZA-1 Manager for review.

- Submit to BVCI as part of the Loss Control Program a Designation of Competent Persons Form (Figure 1). The subcontractors shall designate competent persons for each area listed that is applicable to their work. Occupational Safety and Health Administration (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 subcontractors' 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 BVCI, state, federal, and local agencies, and Owner representatives 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 subcontractor'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 BVCI Loss Control 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 Program are submitted to the BVCI Loss Control Manager in a timely manner.

- Provide a system for ensuring that safety task assignments (STAs) are held and documented daily for all subcontractor employees. A copy of the

STA reports (Figure 3) must be submitted weekly to the BVCI Loss Control Manager.

- Provide a system for immediately reporting all injuries, accidents, illnesses, fires, hazardous material spills, environmental incidents and unsafe conditions and procedures to the subcontractor's safety representative or designee and the BVCI Loss Control Manager.

- Hold and document a system of weekly "toolbox" safety meetings for all subcontractor employees. A copy of the Weekly Safety Meeting Reports (Figure 4) must be submitted to the BVCI Loss Control Manager. Weekly toolbox report forms can be obtained from the BVCI Loss Control Manager.

- 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 BVCI. The CCO requirement applies to operators of equipment that has a capacity of 20 tons or greater. Operators of equipment with a capacity of less than 20 tons must be qualified and designated but are not required to have the CCO certification.

- Designate a qualified representative to be responsible for rigging and heavy lifting. A report (lift plan) shall be required prior to all 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 and/or 90 percent of the crane's load chart. The following items shall be included in the report:

  – Make and model number of the crane or hoist.

  – Lift radius, boom angle, and boom length, if applicable.

  – Lifting capacity of the crane or hoist for the particular configuration.

  – Size and capacity of all rigging.

– Weight of object being lifted and associated rigging.

– Diagram of lift layout.

Such reports shall be submitted to the BVCI Loss Control Department for review prior to the lift.

- Establish a documented hazard communication program 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 subcontractor 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 subcontractor'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 subcontractor 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 BVCI 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 BVCI. 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 ZA-1 Project EHS requirements. Records of such training shall be maintained onsite by the subcontractor and made available upon request for inspection by BVCI.

- Provide written disciplinary procedures equal to or greater than those discussed in Subsection 1.3.2 of this Project Loss Control Program Manual. This procedure must include enforcement responsibilities of all supervisory personnel.

- Provide appropriate first aid/medical coverage for their employees and submit weekly First Aid Logs (Figure 5) to the BVCI Loss Control 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. Subcontractors' programs shall be in compliance with BVCI and ZA-1 project requirements. As part of the subcontractor's evacuation/emergency plans, the subcontractor will include a comprehensive list of resources and emergency contact list similar to that found on Figure 6.

- Adhere to BVCI's JHA Policy as outlined in Section 1.6. (Refer to Figure 7 for a guide to completing the JHA.)

- Develop and implement a Drug and Alcohol Testing Program as required by the contract documents.

- Conduct daily work area safety, health, and environmental inspections (Figure 8) with written reports submitted weekly to BVCI. Included in the reports shall be deficiencies detected and corrective action taken.

- Develop and implement an Environmental Control Program that is compliant with Section 5.0 of the Project Loss Control Manual and all applicable federal, state, and local environmental regulations.

1.2.3 Drug Testing

BVCI 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 subcontractor to expulsion from the jobsite and contract termination.

All subcontractor employees shall submit to drug and alcohol screening tests before reporting at the project jobsite. Only employees who are certified drug free and alcohol free shall be permitted by the subcontractor to work at the project. (Refer to Figure 33.) This requirement applies to all subcontractor employees, including supervisory employees, who are or will be assigned to the jobsite for more than a few days. Supplier 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 persons are subject to the search procedures for drugs set forth in this Loss Control Manual.

1.3 Safety and Health Surveillance Policy and Procedures

1.3.1 Surveillance Policy

Subcontractors are responsible for the enforcement of their respective Subcontractors' Loss Control Programs, the Project Loss Control Program, and ZA-1 Project EHS requirements. BVCI will provide surveillance of subcontractors' 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, BVCI will advise the subcontractor of the violation and direct that the violation be corrected. If there is a conflict between project loss control rules, Subcontractors' Loss Control Program rules, the ZA-1 Project EHS rules, and governmental regulations, the most restrictive shall apply. Subcontractors shall be informed of the violation by one of the following methods.

1.3.2.1 Safety, Health, and Environmental Violation Notice. The subcontractor will be informed of identified violations of safety and health standards by means of a Safety, Health, and Environmental Notice (Figure 9). Violation notices will be delivered by the most expeditious method to the subcontractor's onsite construction office. The subcontractor will receive an original and one copy of each violation notice.

The subcontractor 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 subcontractor shall state in writing the corrective action taken, date and sign the original notice, and return it to BVCI.

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 BVCI or a ZA-1 Project representative considers a violation to be imminently dangerous to life, limb, or property, the subcontractor'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 BVCI and/or ZA-1 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, the Owner and/or BVCI will notify the subcontractor's corporate office if a particular violation is repeated or if the subcontractor's field supervision is not cooperative. Such notification to the subcontractor'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 subcontractor 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 subcontractor, BVCI will initiate steps to correct the violation and back charge such expenses to the subcontractor.

1.3.4 Notice to Employee of Safety and Health Violation

Subcontractor employees who knowingly violate the project's loss control rules will be issued a safety and health Personal Violation Notice (Figure 10). If any one employee receives three Personal Violation Notices, disciplinary action, which shall include discharge from the project, will result. Employees knowingly or willfully violating project loss control rules shall be subject to discharge without prior warning. Nonserious type personal violation notices are handled with progressive discipline protocols as follows:

- First Offense: Oral Warning (documented).
- Second Offense: Written Warning, 3 day suspension (nonpaid) from the Project.
- Third Offense: Permanent removal from the Project.

Variances from protocols are not allowed unless approval is granted via the BVCI Project Field Manager and the BVCI Project Loss Control Manager. Subcontractors that issue safety and health related personal violation notices to their employees are required to forward the discipline records to BVCI within 24 hours after issuance.

Employers will receive a copy of all Personal Violation Notices issued to their employees.

Personal Violation Notices may be issued to subcontractor supervisors for not enforcing the Project Loss Control Program rules with the employees under their supervision.

Employees discharged for violation of Project Loss Control Program rules shall not be eligible for rehire for the duration of the project.

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 BVCI or a ZA-1 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 subcontractor representative after corrective action has been completed. The subcontractor shall state in writing on the tag the corrective action taken, date and sign the tag, and return it to BVCI. 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 Program Manual

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

1.4.2 Project Construction Coordination Meetings

BVCI will schedule project construction coordination meetings weekly and at any other time deemed necessary. The purposes 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 subcontractors' safety representatives and BVCI and Owner and, in general, further the Project Loss Control Program. All subcontractors are required to have their safety representative in attendance.

1.4.3 Injury/Illness & Near Miss/Property Damage Reporting

Immediately after they happen, all injuries, occupational illnesses, near misses, and property damage accidents shall be investigated by the subcontractor's safety representative and reported to BVCI, who, in turn, will report to a ZA-1 Project representative. The safety representative shall complete an Injury/Illness Investigation form (Figure 12) or Near Miss/Property Damage form (Figure 38). The safety representative shall submit the completed report to BVCI along with any supportive information such as photographs, witness statements, etc., within 2 working days after the accident happens. Reports shall be dated and signed by the subcontractor's safety representative. BVCI shall, in turn, submit the report to a ZA-1 Project representative within 5 days.

If a serious injury (see definition below), fatality, property damage, accident, or any damaging fire occurs, BVCI 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 two 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 BVCI Project Loss Control Manager.

1.4.4 Return-to-Work Program

Every effort shall be made to **return workers to work** after a work-related injury or illness, under the direction of the physician. The insurance carrier will be in contact with the physician to determine the worker's physical demands and limitations. Subcontractors shall also be aware of the worker's status and assist in managing the return-to-work program.

A return-to-work program shall be developed and implemented by each subcontractor to assist workers who are temporarily disabled due to an injury or illness. The subcontractors shall participate in the return-to-work program.

The subcontractor shall agree that their injured workers shall be treated by an authorized medical treating facility. The site medical facility shall be utilized for initial treatment and evaluation of all injured workers. Follow-up care will be provided in accordance with applicable Workers' Compensation statutes.

When subcontractor workers report a work-related illness or injury, immediate notice shall be provided to BVCI and the subcontractor 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 subcontractor shall provide modified work until their 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 subcontractor with approval from BVCI.

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

1.4.5 Government Agency Inspection Procedures

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

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

BVCI shall examine the government agency inspection official's credentials prior to the start of any onsite inspection. At all times while onsite, the government agency inspection official shall be treated courteously and given full cooperation.

Subcontractor agrees that, in the event of any violation of EHS laws arising from subcontractor's and/or subcontractor's employees' action or failure to act, subcontractor 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 BVCI and the ZA-1 Project all directly related and documented costs expended to resolve the violation.

1.5 Fire Protection

1.5.1 Responsibilities

Each subcontractor shall be responsible for fire protection throughout all phases of construction as required by the National Fire Protection Code and OSHA Standard 29 CFR 1926 Subpart F.

Only work procedures that minimize fire hazards to the greatest extent practical shall be used. Fuels, solvents, and other volatile or flammable materials shall be stored in an area designated by BVCI. Good housekeeping is essential to fire prevention and shall be practiced by all site subcontractors.

Unless otherwise specified, untreated canvas, paper, plastic, and other flammable flexible materials shall not be used inside buildings. If such materials are on equipment or materials that arrive at the project site, they shall be removed and replaced with an acceptable covering before the equipment or material is stored or moved into the construction area. Permanent storage of flammable or combustible materials shall be in designated areas. Temporary storage inside buildings is allowed only if the materials are necessary for construction, and all materials are removed from inside at the end of the day.

Fire extinguishers shall be maintained and inspected on a regular basis. (Refer to Figure 13.)

1.5.2 Reporting Fires

All fires, regardless of size, shall be reported immediately to BVCI.

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

1.6 Specific Requirements

1.6.1 Job Hazard Analysis Policy

1.6.1.1 Requirement. Subcontractors shall conduct a JHA on all major work operations, work operations that are particularly hazardous by nature, and those operations requiring special planning. 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.
- BVCI Safety and Health Program requirements.
- Chemicals and processes involved.

1.6.1.3 Procedure. Figure 7 shall be used as a guide to completing the JHA. The form is divided into three areas: Sequence of the Job; Potential Hazards; and Recommended Action, Procedure, and/or Equipment. The following shall be considered when completing each section:

- Sequence of the 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 the 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 powerline, causing a potential electrical hazard; the truck hitting and damaging other equipment and structures, etc.

- Recommended Action or Procedure--For each hazard identified in the Potential Hazard 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.

Upon completion of the JHA, but before the start of the work operation, the subcontractor shall submit the JHA to BVCI for review.

Upon approval by BVCI, the subcontractor shall use the form to ensure that the elements listed are in place before the start of the work operation. The subcontractor 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 subcontractor shall modify the JHA as appropriate to address the issue. The subcontractor shall ensure that affected employees are trained on any changes or additions made to the JHA.

1.6.2 Housekeeping

Subcontractors 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 subcontractors shall instruct their supervisors to maintain good housekeeping.

Each work area shall be cleaned and swept daily, if applicable, by the subcontractor 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.

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

- Back charges to the subcontractor 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.
- Reports to the Owner of inadequate subcontractor performance.
- Suspension of the work until a proper level of housekeeping is achieved, as deemed necessary by BVCI.

All recommendations for improved housekeeping from a BVCI or ZA-1 Project representative shall be acted upon immediately by the subcontractor in violation.

1.6.3 Ground Fault Protection

Ground fault circuit interrupters 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 ground fault circuit interrupter shall be tested before each use. (Refer to Figure 14.)

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 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 BVCI 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.). Subcontractors may use their own daily inspection forms for these pieces of equipment.

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 Monthly Crane Inspection Report form (Figure 15), which must be submitted to BVCI by the fifth working day of each month. Inspection report forms can be obtained from BVCI. Subcontractors may use their own report form as long as the form contains the same information contained in Figure 15.

Additionally, the subcontractor shall submit a current third-party annual crane inspection report to BVCI 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 a third-party certified inspection service.

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 1926.550.

1.6.5 Hazardous Material Program

It is solely the subcontractor's responsibility to implement and maintain a written Hazard Communication Program as stated in OSHA Standard 29 CFR 1910.1200. Subcontractors shall submit a copy of their written Hazard Communication Program to BVCI before they begin work onsite.

Subcontractors shall submit a Material Safety Data Sheet (MSDS) to BVCI for any and all hazardous material they bring onsite or for which they are responsible. The MSDS shall be submitted before the material arrives onsite.

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

Subcontractors shall be responsible for the safe storage, use, and disposal of all hazardous material they bring onsite, or for which they are responsible.

Subcontractors shall conspicuously label with their company name all containers of hazardous material for which they are responsible.

1.6.6 Onsite Storage and Dispensing of Flammable and Combustible Liquids

The subcontractors 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 the Combustible and Flammable Material Storage Requirements (Figure 16) for general guidelines.

The location of outdoor storage tanks shall be acceptable to BVCI before installation.

1.6.7 Fall Protection

The subcontractors 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:

- Fall Protection Plan--Before starting work operations that require fall protection, the subcontractor shall submit a fall protection plan to BVCI. 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 the Sample Fall Protection Plan in Appendix E to the 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), 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 subcontractor 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.

1.6.8 Scaffold Tagging Procedures

1.6.8.1 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 subcontractor's Loss Control Program rules, and governmental regulations, the most restrictive shall apply.

1.6.8.2 Compliance. It is the policy of BVCI that all onsite 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.

1.6.8.3 Subcontractors' Requirements. Subcontractors are responsible for ensuring that their subsubcontractors tag their scaffolds in accordance with the project scaffolding tagging policy.

1.6.8.4 Procedure. Scaffold tags (Figure 17) shall be provided by the subcontractor and shall conform to the following color codes and wording.

All scaffolds shall be marked with one of the following tags (Figure 17):

- Green Tag--This scaffold was built to meet OSHA scaffold regulations; it is safe to use.

- Yellow Tag--This scaffold does not meet OSHA scaffold regulations; safety harnesses shall be worn.

- Red Tag--Warning--This scaffold is not complete; DO NOT USE.

A competent person designated by the subcontractor 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.

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 "Body Harness Must Be Used."

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

1.6.8.5 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.

Subcontractor 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 subcontractor'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 Employee of Safety and Health Violation, of this Project Loss Control Program Manual.

1.6.9 Confined Space Entry Procedure

1.6.9.1 Confined Space Definition. A confined space is a tank, vessel, silo, vault, pit, open topped space more than 4 feet (1.2 m) deep, pipeline, duct, sewer, or tunnel that meets the following criteria:

- Limited means of access or egress, and
- Not designed for continuous employee occupancy, and
- Having one or more of the following characteristics:
  - Less than 19.5 percent or more than 23.5 percent oxygen.
  - Flammable/combustible/explosive atmospheres present or capable of being generated or entering into an area.
  - Toxic atmospheres present or capable of being generated or entering into an area.
  - Areas not protected against entry of water, gas, sand, gravel, ore, grain, coal, biologicals, radiation, corrosive chemicals, or any other substance which could possibly trap, suffocate, or harm a person.
  - Poor ventilation.
  - Restricted entry for rescue purposes.

1.6.9.2 Intent. The intent of the confined space entry procedure is to ensure that personnel who perform work in a confined space are in compliance with project safety and governmental regulations. If there is a conflict between project loss control rules, the

subcontractor's Loss Control Program rules, and governmental regulations, the most restrictive shall apply.

1.6.9.3 Compliance. It is the policy of BVCI that all onsite personnel shall comply with this confined space entry procedure. All confined spaces meeting the definition of Subsection 1.6.9.1 shall be authorized for entry by means of a permit. No personnel shall enter a confined space prior to compliance with all permit criteria.

1.6.9.4 Procedure. Confined Space Entry Permits (Figure 18) shall be made available through the subcontractor's safety representative. The subcontractor's Confined Space Entry Permit content shall either meet or exceed the content in Figure 18.

Subcontractors shall fill out the permit in full, post a copy of the form in a conspicuous location at the entrance to the confined space, and retain a copy for their records.

If there is more than one entrance to the confined space, all entrances shall be posted with a copy of the permit.

Before entering the confined space, all persons shall be given a briefing as to the precautions that must be taken.

When the work in the confined space is completed, the person authorizing entry into the confined space shall verify that all persons have exited the confined space and that it is safe to remove the permit. The authorizing person shall then sign, date, and write in the time the permit was removed.

Subcontractors shall retain all issued permits for their records. Copies of the permits shall be made available to BVCI for auditing purposes.

1.6.10 Trenching and Excavation Notice

Before subcontractors commence work on any trench or excavation, they shall first submit a completed Trench and Excavation Notice (Figure 19) to BVCI. The notice shall be submitted far enough in advance to allow BVCI ample time to verify the subcontractor's submittal. After verifying the information, the authorized BVCI representative shall sign the notice and return a copy of it to the subcontractor, and inform the ZA-1 Project representative. The subcontractor may commence work after receiving the signed notice. For all trenches or excavations over 20 feet deep, the subcontractor must have the sloping, shoring, or shielding method designed by a Professional Engineer registered in the state. The design must be submitted to BVCI as an attachment to the Trench and Excavation Notice.

The subcontractor 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 BVCI upon request.

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

1.6.11 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 subcontractors 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 subcontractor erecting the barrier tape shall hang a tag on the tape that indicates the hazard, duration of hazard, name of subcontractor, and name and phone number of the person erecting the tape.

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 subcontractor's responsibility to provide such protection as well as the barrier tape. It will be the responsibility of the subcontractor erecting the barrier tape to maintain it as long as the hazard is present.

1.6.12 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).

1.6.13 Welding and Cutting Permit

Subcontractors shall obtain a Welding and Cutting Permit (Figure 20) from their safety representative before welding, cutting, grinding, or performing any other "hot work" in hazardous work areas or in other areas identified by BVCI. Hazardous work areas are those areas that contain, or have the potential to contain, flammable or combustible materials, gases, dusts, vapors, or liquids.

The subcontractor 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 subcontractor 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 subcontractor shall return the permit to his safety representative for filing.

1.6.14 Steel Erection

1.6.14.1 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.

1.6.14.2 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.

1.6.14.3 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 BVCI 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 21) and submit it to BVCI before any steel erection activities begin. The checklist shall be discussed in a specific steel erection meeting that will be coordinated by BVCI. 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 BVCI 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 (Figure 22).

1.6.14.4 Perimeter Guardrail Fall Protection Systems. BVCI 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 BVCI Project Field Manager, the Loss Control 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 23). The deficiencies shall be corrected by the responsible party noted on the form. After the deficiencies are corrected, BVCI and the steel erection contractor will sign off on the Perimeter Guardrail Turnover Form. Subcontractors 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 subcontractor assumes responsibility for maintenance of the fall protection system(s). If a contractor damages the guardrail system, that contractor must make repairs immediately.

1.6.15 Chromium VI Exposure Program

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

Subcontractors are to provide to BVCI 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 BVCI 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 BVCI.

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 subcontractor must provide BVCI 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.

1.7 Demolition-Related Hazardous Materials Protection Program

1.7.1 General

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

To accomplish this task, BVCI focuses on having the Owner, 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 the Owner has adequately identified and abated the demolition-related hazardous materials to a level that removes BVCI from application under the relevant governmental employee protection regulations. The Owner is responsible for the identification and removal of known potential hazards. The Owner 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 BVCI from application of the relevant governmental employee protection regulations. Upon the receipt of the Owner's certification, BVCI will have a qualified party verify the adequacy of the Owner'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 subcontractors are hired and are potentially exposed to the materials, specific programs are to be developed by the subcontractor 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 BVCI Loss Control 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 onsite, the Project Manager assumes responsibility and will work with the Division Safety and Health Manager to ensure compliance with this procedure.

1.7.3 Worksite-Specific Procedure

This procedure is supplemental to any Owner 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. The Owner 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 BVCI employees and/or BVCI subcontractors, 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 BVCI responsible party and Owner.

- The Owner'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 subcontractor's supervisor responsible for the work, BVCI representative(s) responsible for the work, BVCI consultant, Owner 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 BVCI responsible party.

- Any discovery of, or potential for, suspect demolition-related hazardous materials must be forwarded to the BVCI responsible party so that identification and abatement can be initiated through the Owner.

- The Owner will provide BVCI 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 BVCI responsible party, using a qualified inspector, will 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.

- The inspector will provide the BVCI 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 BVCI representative(s) responsible for the work, a BVCI qualified inspector, the Owner representative, 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 BVCI 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 BVCI.

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 BVCI and the Owner 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 BVCI 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. 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

Subcontractors shall establish a program consisting of energy control procedures, employee training, and periodic inspections on subcontractor-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 subcontractor's program.

As required by project conditions, the subcontractor shall coordinate the use of a project-specific lockout/tagout procedure for all work on permanent plant equipment and

interface work with the Owner's existing facilities. Subsection 1.8.3 shall be strictly adhered to in these cases.

1.8.2 BVCI Safety Lockout/Tagout Procedure

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

1.8.3 Owner 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, BVCI has established mandatory safety and health rules. Subcontractors shall ensure that their employees receive a copy of the Project Safety and Health Rules (Figure 24) 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 Program Manual as deemed necessary by BVCI. Revisions or additional rules will be sent to each subcontractor. Upon receipt, the subcontractor will be responsible for informing each of his or her employees and subcontractors 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, Owner, subcontractor 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 the Owner, BVCI, subcontractors, or their employees from applicable Occupational Safety and Health regulations promulgated by governmental authorities:

Housekeeping

(1) Leads, hoses, and extension cords shall be hung up (approximately 7 feet) with a nonconductive material, off all floors, stairways, and walkways. 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 BVCI Project Loss Control Manager.

Safety goggles shall be worn when possible 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 Subcontractor hard hats are to be colored the same for identification purposes.

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

Tennis shoes shall not be allowed on the jobsite.

(6) Shirts and Pants--Shirts covering the full trunk and shoulders are required. Tanktops or midriff shirts are not allowed.

Cutoff jeans or shorts shall not be worn on the jobsite.

High visibility work vests, with reflective markings, shall be worn in all construction areas during all phases of construction and commissioning. The vests must meet the ANSI Class II specifications and be fluorescent (orange or lime green).

(7) Seat belts shall be worn by all personnel riding in vehicles, as well as heavy equipment operators and forklift operators.

(8) No riders other than the operator shall be allowed on any piece of mobile equipment.

(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.

Fall Protection

(1) Fall protection is required 100 percent of the time when employees are exposed to a fall in excess of 6 feet 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.

(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.

(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.

(7) All fall arrest equipment subjected to impacts caused by a free fall or by testing shall be removed from service.

(8) Employees shall store all fall arrest equipment in a cool dry place not subjected to direct sunlight.

(9) Employees shall not use fall arrest equipment until they have been properly trained in its use.

(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.

(13) Proper guardrails shall be installed on all opensided 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.

(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.

(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.

(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, the midrail shall be at 21 inches, and the toeboard 4 inches. 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) Subcontractor 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.

(5) Cylinders not having fixed handwheels shall have keys, handles, or non-adjustable 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.

(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--Oil, grease, or similar materials shall not be allowed to come in contact with any valve, fitting, regulator, or gauge of oxygen cylinders:

- Oxygen shall never be used as a substitute for compressed air.
- When an oxygen cylinder is in use, the valve should be opened fully in order to prevent leakage around the valve stem.

(15) Acetylene--Acetylene cylinders shall be properly secured and always used, transported, or stored in a vertical position. Cylinders shall be protected from sparks, flames, and contact with energized electrical equipment:

- An acetylene cylinder valve 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 and Cutting Permit (Figure 20) from their subcontractor. 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 and cutting, the operator shall wear an approved helmet or goggles, proper protective gloves, and clothing. Helpers or attendants shall wear proper eye protection. Other employees shall not observe welding operations unless they use approved eye protection.

(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 properly grounded 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 nonapproved 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 ladder 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.

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 midrail and toeboard, 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.

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 ladders must meet Type IAA strength requirements.

(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.

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

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

(17) When employees are working on or above open grating, a canvas or other suitable covering shall be used to cover the grating to prevent tools or parts from dropping to a lower level where others are present, or the danger area shall be barricaded or guarded.

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

Portable Electric 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 powered tools shall be examined before use to ensure general service-ability 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.

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

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

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

(6) All power tools and cord sets shall be protected by ground fault circuit interrupters.

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.

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.

(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.

(16) All spreader bars shall be tagged 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 lift plan shall be required prior to all 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 and/or 90 percent of the crane's load chart.

Flammable and Combustible Liquids

(1) "Danger, No Smoking" signs shall be posted around all flammable and combustible liquid storage areas.

(2) All aboveground tanks shall have impervious containment around them of adequate size to contain spills.

(3) Tanks shall be vented with a pipe not less than 1-1/4 inch inside diameter and shall be 12 feet high from the adjacent ground level.

(4) Tanks shall be kept at least 20 feet from buildings.

(5) At least one 20 pound (4A60BC) ABC fire extinguisher shall be kept between 25 feet to 75 feet from tanks.

(6) All tanks shall be properly grounded.

(7) All tanks shall be labeled with the contents and subcontractor's name.

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 18) from the Subcontractor.

(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) Subcontractors 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 Operator's Daily Checklist will be completed before each shift and any hazardous condition corrected before use (refer to Figure 25).

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 1926.251.

(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 1926.760(a)(1).

(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.

Reporting Accidents and Injuries

All accidents and injuries are to be reported to the Subcontractor'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 ZA-1 Project.

If there is a conflict between project safety and health rules, subcontractor'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, BVCI 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. They are to be inserted 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 subsubcontractors 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 Loss Control Manager will review the memorandum and either reissue or direct that the memorandum be removed from the manual.

2.0 Emergency Procedures

2.1 ZA-1 Project Emergency Response Procedures

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

2.2 Introduction

In any emergency situation on the ZA-1 Project, the emergency response will take the form of an Incident Command System. The Black & Veatch Construction, Inc. (BVCI), Project Loss Control Manager will assume the role of Incident Commander. If the BVCI Project Loss Control Manager is unavailable, the BVCI Project Field Manager would assume this role. If this individual is unavailable, the next highest-ranking BVCI manager would assume the role. In the absence of any BVCI personnel, the subcontractor shall implement the system. All personnel on the project shall obey the Incident Commander's every command no matter who assumes the role. Subcontractor 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 subcontractor shall provide any necessary equipment. Subcontractors will not be compensated for any downtime or lost production for any emergency situation.

At no time shall the subcontractor address media concerning an onsite emergency. This shall be done only by a BVCI official or under the direction of a BVCI official or by PG&E.

A list of site-specific resource and emergency contacts (Figure 6) will be developed by BVCI and be provided to subcontractors to supplement their own resource and emergency contacts list. Subcontractors are to include a comprehensive list of resource and emergency contacts as part of the Subcontractor Loss Control Program.

2.3 Medical Emergency Response

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

During normal working hours, the subcontractor shall alert the site First Aid Station and the BVCI Project Loss Control Manager. If the injury occurs after hours, the subcontractor shall alert the onsite BVCI 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.

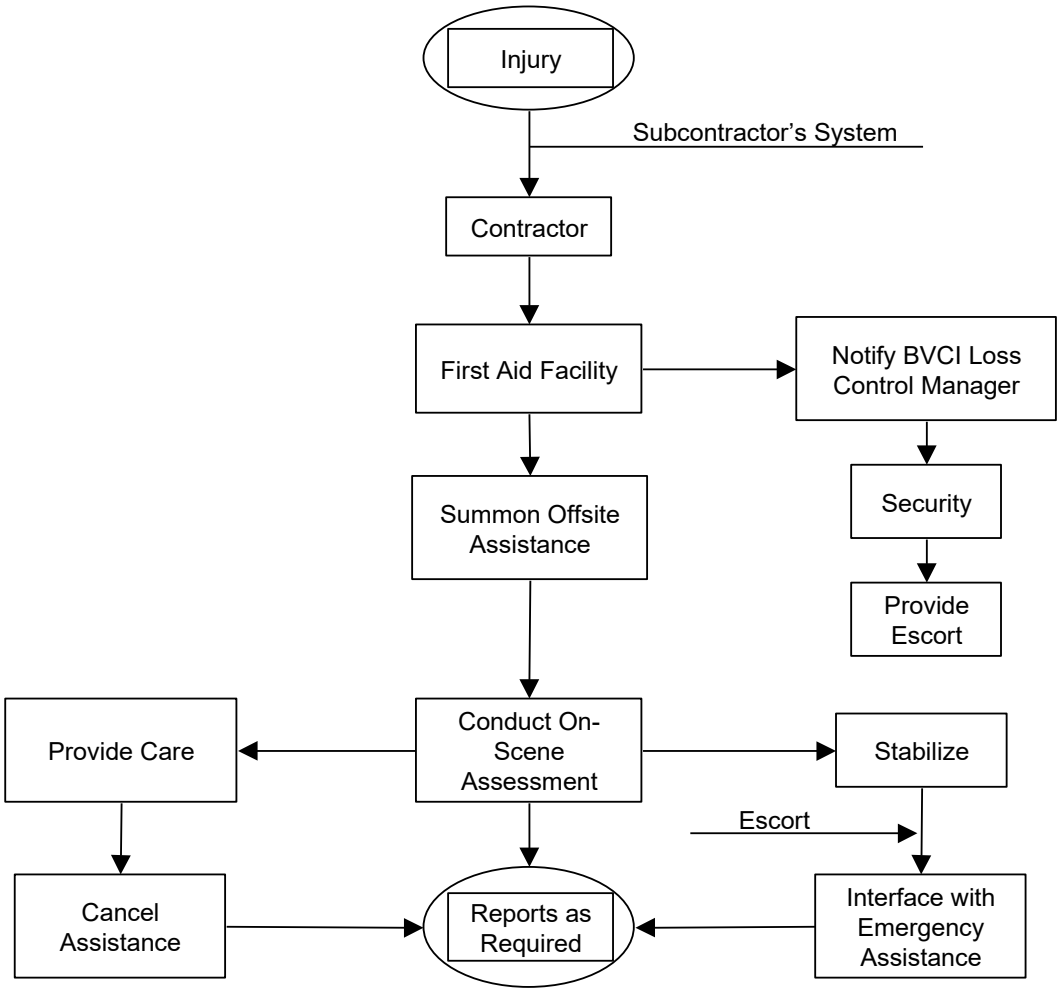
The individual shall not break communication until directed to do so.

The subcontractor shall, in any emergency situation, notify the Project Loss Control 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 Loss Control Manager.

The first aid staff will respond to the incident and conduct a scene assessment. They will either treat the patient and cancel the offsite emergency assistance or they will stabilize the victim and interface with the offsite emergency personnel. (Refer to Figure 26.)

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 subcontractor shall use an in-house emergency notification system to alert the subcontractor's supervisors of the situation.

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

Major Emergency – During normal working hours, the subcontractor shall alert BVCI Safety personnel and inform them of the situation. If the fire or spill occurs after hours, the subcontractor shall call the onsite 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, BVCI Safety personnel will relay the information to project management and summon offsite assistance.

BVCI 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 BVCI 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."

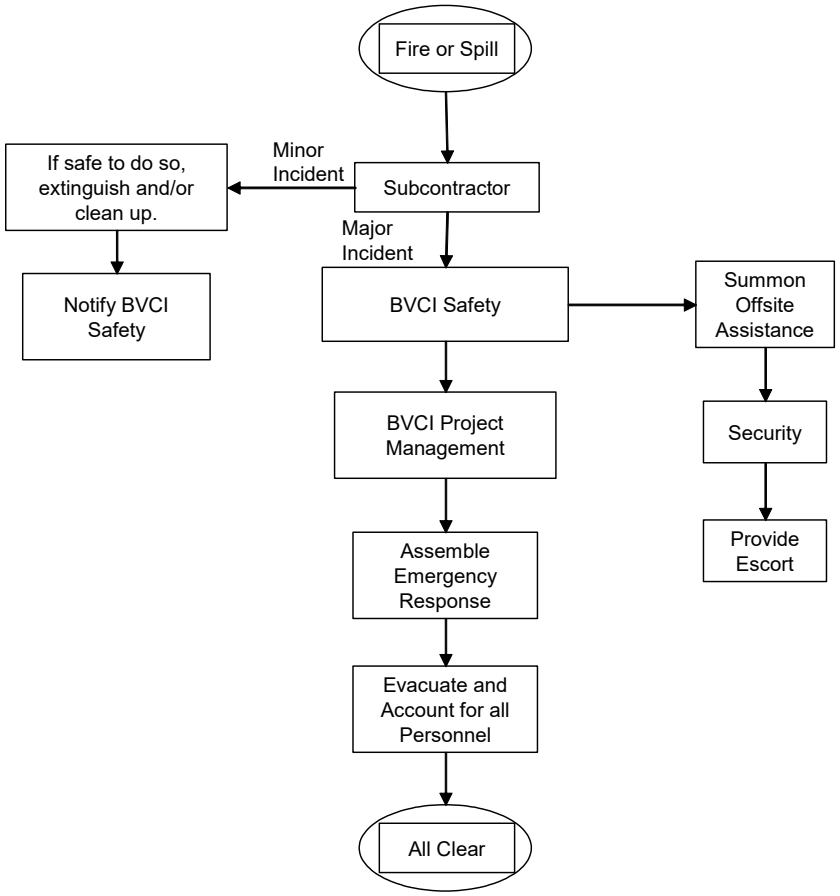
Upon hearing the announcement, all personnel shall report to the site evacuation area unless otherwise directed by BVCI.

Subcontractors shall account for their personnel and report any missing person to BVCI.

All personnel shall remain in these evacuation areas until released by the BVCI Field Project Manager and/or Project Loss Control 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 subcontractor safety representative. The supervisor/safety representative shall see that the material is properly disposed of. The spill shall be reported to the BVCI Project Loss Control Manager as soon as possible, but no later than 24 hours after the spill.

Any major chemical spill shall be immediately reported to the BVCI Project Loss Control 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 subcontractor 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 BVCI Project Loss Control 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

2.5 Severe Weather Procedures

BVCI 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 subcontractor 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."

Subcontractors shall be responsible for their personnel and report anyone missing to BVCI.

All personnel shall remain in the designated shelter area until released by the BVCI Field Project Manager and/or Project Loss Control Manager.

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

The evaluation team or Project Loss Control 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 Loss Control Manager may have subcontractor 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 subcontractor 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 bomb threat checklist (Figure 27). After completing the checklist, the person should notify the BVCI Project Field Manager who shall then assemble a project evaluation team and notify the appropriate ZA-1 personnel. The evaluation team shall review the bomb threat checklist and determine what course of action to follow:

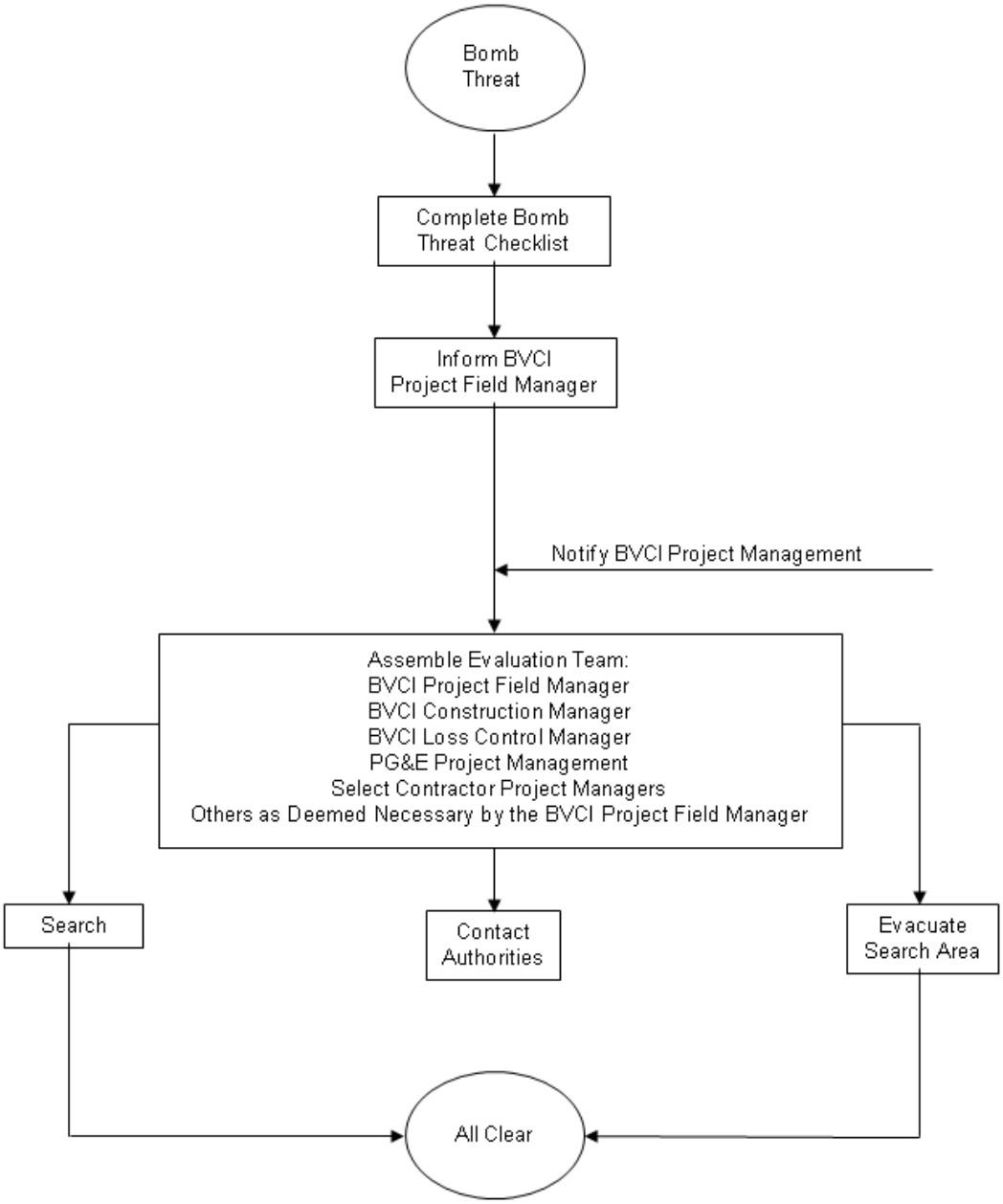
- Search the area without evacuating.
- Evacuate the area, then search.
- Notify the proper authorities.

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 subcontractor of the situation. It will be each subcontractor'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 subcontractor who finds that an employee is missing shall notify the BVCI 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 BVCI Project Field Manager. Additional evacuation areas and routes shall be identified later and the information distributed to all subcontractors upon their arrival onsite. 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 ZA-1 Project Security Program

3.1.1 Introduction

This Project Security Program provides an administrative structure within which each subcontractor 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 subcontractor 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 subcontractors and the surveillance to determine subcontractors' 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 ZA-1 Project. 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 subcontractors' activities for conformance with the minimum requirements of the Project Security Program.

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

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

3.1.3 General Scope of Services

As a service to all the subcontractors at the ZA-1 Project, security services are provided. These services 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 will 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 onsite equipment and facilities.
- Inspecting vehicles, hand-carried containers, and similar objects as required by the BVCI Project Loss Control Manager for items not authorized to be taken from or brought onto the plant site.
- Preparing and submitting reports as required by the BVCI Project Loss Control Manager.

3.1.4 Project Security Program Administration

BVCI 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, BVCI has established mandatory security rules for the ZA-1 Project. All employees will receive a copy of the Security Regulations as part of their orientation and check-in process (Figure 28). Subcontractors 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 BVCI. Revisions or additional rules will be sent to each subcontractor. Upon receipt, the subcontractor 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 ZA-1 Project. These rules apply to management and subcontractor 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 BVCI, subcontractors, 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 BVCI. 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 BVCI management personnel or site security officer upon demand. Failure to comply with this regulation will result in the refusal of entry to the ZA-1 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 card that acknowledges receipt of the Rules and Regulations (Figure 29). At the same time, each applicant completes information on an envelope (Figure 30) that is retained in the Project Loss Control Manager's Office. Photographs are taken by BVCI 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 BVCI, ZA-1 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 subcontractor supervisors. Employees issued orange badges shall have 24 hour access to the site with prior approval from the Project Field Manager and the Project Loss Control 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 BVCI Project Loss Control Manager by using the After Hours Request Form (Figure 31). The After Hours Request Form must be completed and submitted by 3:00 p.m. of the day the subcontractor 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 BVCI. 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.

- 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--BVCI will determine the number of and need for vehicles to be on the project site and will issue onsite parking passes accordingly (Figure 32). 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 ZA-1 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 ZA-1 Project and termination of employment.

Most routine inspections will occur when leaving the ZA-1 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 ZA-1 Project. Refusal to cooperate with the inspection program will result in the refusal of entry to the ZA-1 Project and termination of employment.

(4) Alcohol and Drugs--The use of narcotics and alcohol is strictly prohibited at the ZA-1 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 ZA-1 Project, any narcotic, alcoholic beverage, or nonprescribed drug will be discharged. Individuals may be inspected for narcotics prior to entering the ZA-1 Project.

(5) Visitors--Visitors will not be permitted in the ZA-1 Project without proper clearance and identification. Visitors are bound by the same security procedures as employees. Visitor identification badges are the property of BVCI and will be surrendered upon leaving the ZA-1 Project.

(6) Security Rules--Anyone working at the ZA-1 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 towards 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 ZA-1 Project site, or
- Drives any vehicle in a manner which may result in injury to anyone on the ZA-1 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 ZA-1 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 ZA-1 Project security officers. Failure to do so may result in discharge.

3.3 Subcontractor Security Responsibilities and Program Procedures

3.3.1 Responsibilities

Subcontractors 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 subcontractor 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 ZA-1 Project.

3.3.2.1 Authorized Signature Card. Subcontractors must submit one signature card (Figure 34) for each person whom they want authorized to sign the following forms:

- After Hours Request Form (Figure 31).
- Vehicle Pass Request Form (Figure 32).
- Equipment and Material Removal Permit (Figure 35).

Three signatures are required for comparison purposes. This card must be submitted to BVCI. 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 subcontractor having personnel onsite after normal working hours must have prior approval from the BVCI Project Loss Control 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 Request Form.

This is not a request for premium overtime payment.

3.4 Security Surveillance Policy and Procedures

3.4.1 Surveillance Policy

Subcontractors are responsible for the enforcement of the Project Security Program. BVCI and security will provide surveillance of subcontractors' 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, BVCI will advise the subcontractor of the violation and direct that the violation be corrected. If there is a conflict between project security rules, subcontractors' security rules, and governmental regulations, the most restrictive shall apply. The subcontractor shall be informed of the violation by one of the following methods.

3.4.2.1 Personal Violation Notice. To subcontractor employees who knowingly violate the project security regulations, a Personal Violation Notice (Figure 10) will be issued. If any one employee should receive three Personal 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 Personal Violation Notices issued to employees will be forwarded to their employers.

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

3.4.2.2 Project Loss Control Meetings. BVCI will schedule weekly project loss control meetings. The purpose of these meetings is to discuss safety and security concerns as they relate to the ZA-1 Project; provide for two-way communication between the subcontractor's representatives and BVCI; and, in general, further the Project Safety and Security Program. All subcontractors 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 subcontractor weekly toolbox meetings.

3.4.2.3 Emergency Vehicles. BVCI and the BVCI Project Loss Control 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. BVCI 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. BVCI 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 onsite 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 subcontractor, as determined by the BVCI Project Loss Control 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 subcontractor. 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 subcontractor. All Craft Safety and Health Representatives will meet monthly or as deemed necessary by the BVCI Project Loss Control Manager. The BVCI Project Loss Control 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 ZA-1 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

Black & Veatch (B&V) professionals, subcontractors, and subcontractors' 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 subcontractors 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 subcontractors' individual programs and the monitoring of subcontractors' 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 contains the following:

- Minimum requirements for individual subcontractors' environmental programs.
- Subcontractor's responsibilities for performance, coordination, communication, monitoring, reporting, and recordkeeping during the project.
- Specific and required construction practices with respect to the environmental programs that apply to this project.
- Procedures for advising subcontractors of environmental violations and issuance of violation notices.
- Procedures for initiating corrective action and back charges to the subcontractor if he/she does not comply with environmental violation notices.

5.1.2 Environmental Operations Plan Administration

B&V will administer the Environmental Operations Plan and will have such authority as described herein.

5.1.3 Subcontractor'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 subcontractor 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.

Subcontractors will be responsible for the performances of their own employees, as well as those of their subcontractors. This requirement will apply continuously during the entire contract period and will not be limited to normal working hours.

Subcontractor 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. Subcontractors' conformance with the requirements to initiate and maintain such a program is mandatory under the provisions of the governing contract.

The subcontractor's environmental operations program must comply with federal, state, and local regulations. B&V does not make the claim that the Environmental Operations Plan represents all federal environmental requirements. The subcontractor is required to include in its environmental control plan the federal requirements that pertain to its work and activities. The subcontractor is also required to include state and local environmental requirements, which are typically more stringent and broader in scope.

Subcontractors will designate a subcontractor representative to be responsible for the administration of the subcontractor environmental operations programs, the Environmental Operations Plan, and the Owner environmental requirements found in the applicable permits and approvals. Subcontractors also will be responsible for the administration of the subcontractor environmental operations programs and the Environmental Operations Plan for its subcontractors, at any tier.

5.1.4 Program Requirements

The subcontractor 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 owner. In addition, the subcontractor must do the following:

- Deliver one copy of the subcontractor environmental operations plan to B&V 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 B&V; federal, state, and local agencies; and Owner representatives 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 the Owner 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 subcontractor's and the subcontractor'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 onsite by the subcontractor and copies provided to B&V.

- Maintain accurate environmental compliance records and statistics and submit the Loss Management Monthly Summary (Figure 2) to B&V 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 B&V in a timely manner.

- Provide a system for immediately reporting all environmental incidents to the nearest supervisor and to B&V.

- 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 B&V. Use this form to report on the environmental subjects discussed. Weekly Safety Meeting Report forms can be obtained from B&V.

- 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 Daily Work Area Inspection Checklist (Figure 8), and submit them weekly to B&V.

5.1.5 Environmental Surveillance Policy and Procedures

B&V will provide surveillance of subcontractors' activities to determine whether such activities are in compliance with the Environmental Operations Plan. If an apparent violation of an environmental requirement occurs, B&V will advise the subcontractor of the violation and require that the violation be corrected. If there is a conflict among project environmental requirements, subcontractor environmental operations program, Owner safety rules, and government regulations, the most restrictive requirement will apply. Subcontractors will be informed of the violation by one of the following methods.

5.1.5.1 Environmental Violation Notice. The subcontractor will be informed of identified violations of environmental requirements and permit conditions by means of the Safety, Health, and Environmental Violation Notice (Figure 9). Violation notices will be delivered by the most expeditious method to the subcontractor's onsite construction office. The subcontractor will receive an original and one copy of each violation notice.

The subcontractor 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 subcontractor will state, in writing, the corrective action taken, date and sign the original notice, and return it to B&V.

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 B&V or an Owner representative considers a violation to be imminently dangerous to the environment or to human health, the subcontractor's representative will be directed to cease work immediately in that area. The imminent danger condition will be corrected to the satisfaction of B&V; the Owner; and federal, state, and local requirements before work is allowed to continue.

5.1.5.2 Repeated Violations. In addition to the above notifications, the Owner or B&V will notify the subcontractor's corporate office if a particular violation is repeated or if the subcontractor's field supervision is not cooperative. Such notification to the subcontractor'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 subcontractor environmental operations plan and repeated failure to comply with correction directives may result in removal of the subcontractor's management from the project site or termination of the contract.

5.1.5.3 Personal Violation Notice. Subcontractor's employees who violate the project's environmental requirements will be issued a Personal Violation Notice (Figure 10). If any employee receives three Personal Violation Notices, disciplinary action up to and including removal from the project will result. Employees knowingly or willfully violating project environmental requirements will be subject to discharge without prior warning. Employers will receive a copy of all Personal Violation Notices issued to their employees.

Personal Violation Notices may be issued to the subcontractor's supervisors for not enforcing the Environmental Operations Plan requirements with the employees under their supervision. Employees discharged for violation of environmental requirements will not be eligible for rehire for the duration of the project.

5.1.6 Environmental Operations Plan Operations

B&V will distribute to all subcontractors copies of the Environmental Operations Plan as part of the Project Site Safety Plan. Subcontractors will ensure that all their employees and subcontractors are familiar with, and abide by, the contents of this plan, including any changes distributed by B&V.

5.1.6.1 Project Construction Coordination Meetings. B&V 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 Subcontractor's safety representative, B&V, and the Owner; and the promotion of activities required by the Environmental Operations Plan. All subcontractors are required to have their Subcontractor Environmental Representative and Subcontractor Operations Management in attendance.

5.1.6.2 Environmental Incident Reporting. The subcontractor's representative will immediately report to B&V any environmental incident. B&V, in turn, will report to an Owner. The subcontractor's representative will complete an Environmental Incident Report form (Figure 36) and submit the completed report to B&V 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 subcontractor's Environmental Representative. B&V will, in turn, submit the report to Owner within 48 hours.

If a serious incident involving notification of regulatory agencies occurs, B&V 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. B&V Project Management will be notified immediately when an agency environmental compliance officer is onsite. A representative from B&V may accompany the agency environmental compliance officer during inspections of the construction site.

B&V will examine the agency compliance officer's credentials prior to the start of any onsite inspection. At all times while onsite, the compliance officer will be treated courteously and given full cooperation. The compliance officer shall be accompanied by a subcontractor representative at all times.

Subcontractor agrees that, in the event of any violation of environmental regulations or laws arising from subcontractor's or subcontractor's employees' action or failure to act, subcontractor 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 B&V and the Owner 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 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 subcontractor 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 B&V'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 Daily Work Area Inspection Checklist (Figure 8) or equivalent.

5.2.1.5 Storage. B&V 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 B&V:

- 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 subcontractor'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 Daily Work Area Inspection Checklist (Figure 8) or equivalent.

5.2.1.7 Inventory. The subcontractor's representative will provide to B&V a hazardous material inventory of all hazardous material onsite 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

Subcontractor 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 onsite, an 80 gallon salvage drum and absorbent compatible with fuels shall be readily available.

Subcontractor 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 subcontractor 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 onsite, an 80 gallon salvage drum and absorbent compatible with hydraulic oils shall be readily available.

5.2.4 Spill or Release Response

Spill or release response and reporting shall be implemented when substances are released or spills are in excess of the Reportable Quantity (RQ) as listed in the Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to-Know Act (EPCRA), and Section 112(r) of the Clean Air Act (also known as the List of Lists), and if the spill has the potential to migrate beyond the boundary or perimeter of the construction site. The Owner must report the release immediately to the National Response Center (800-424-8802), the State Emergency Response Commission (SERC), and the Local Emergency Planning Commission (LEPC).

5.2.4.1 Response to Incidental Spills or Releases. Contractor shall establish and implement a written spill containment program to handle the possibility of a spill or leakage of drummed or containerized hazardous materials involving any of the following activities: transfer, transport, disposal, and excavations.

The Contractor shall identify the following onsite or offsite personnel and equipment or services necessary to isolate, contain, and mitigate the spill:

- Cleanup contractor or personnel.
- Estimate of response time of offsite contractors.
- Spill containment procedures.

- Special safety precautions.

- Equipment and supplies on hand at site or readily available to respond to contain and clean up the spill.

5.3 Waste Management

5.3.1 Solid Waste Management

5.3.1.1 General Practices. 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.

5.3.1.2 Waste Containers. Containers will be provided in areas where waste is generated to collect and segregate waste streams. These waste containers will be labeled according to the type of waste for which they are intended.

Waste containers for garbage or recycling must be of adequate size and number to handle the amount of waste being generated. Containers storing food wastes must be covered, leakproof, and maintained to prevent a nuisance (e.g., odor, sight) and control vectors such as animals and insects.

Free liquids, as defined by the paint filter test (SW-846 Manual Method 9095B: Paint Filter Liquids Test), will be not be disposed of in the trash. Any liquid wastes will be limited to small containers such as those found in household trash (e.g., soda in a can or cups, hand-washing detergent container with some residue).

5.3.2 Hazardous Waste

5.3.2.1 Hazardous Waste Assessment. The subcontractor who generates solid waste must determine if their waste is defined as hazardous waste, in accordance with this Loss Control manual and federal, state, and local requirements, and if it is generated, stored, transported, treated, and disposed in accordance with those requirements.

Solid waste will be classified as a hazardous waste if it meets any of the following four conditions:

(1) The waste exhibits any of the following four characteristics of a hazardous waste: ignitability, corrosivity, reactivity, and toxicity, as defined by 40 CFR 261.

(2) The waste is specifically defined as being a hazardous waste in one of four lists:

(a) Hazardous waste from specific sources (40 CFR Part 261.32 K List).

(b) Hazardous waste from nonspecific sources (40 CFR Part 26131 F List).

(c) Discarded commercial products and spill residues (40 CFR 261.33 P and U Lists) acute hazardous waste (40 CFR Part 261.30).

(d) Toxic hazardous wastes (40 CFR Part 261.20).

(3) The waste is a mixture of a listed hazardous waste and a nonhazardous waste.

(4) The waste is declared as hazardous by the generator.

The following are exempt from the hazardous waste rules:

- Nuclear materials.
- Fly ash.
- Mining overburden.
- Drilling fluids.
- Ore processing waste.

The subcontractor's is responsible to report in writing to B&V the type of hazardous waste they typically generate prior to the creation of the waste stream or within 24 hours of creating an unexpected hazardous waste.

5.3.2.2 Generator Status. The amount of hazardous waste generated at the site in a calendar month will determine the generator status of the subcontractors and the site collectively. The subcontractors will work toward a goal of minimizing the generation of hazardous waste with the objective that the site does not allow the following:

- Generate more than 220 pounds of hazardous waste or 2 pounds of acute hazardous waste in a calendar month.
- Accumulate more than 2,200 pounds of hazardous waste at any one time.

When determining the quantity, all hazardous waste generated will be included, except the following:

- Scrap metal.
- Empty containers and rinsates from these containers.
- Waste managed immediately upon generation in an onsite elementary neutralization unit.
- Wastewater treatment unit.
- Totally enclosed treatment facilities.
- Used oil managed under 40 CFR 261(6)(a)(4) and 40 CFR Part 279.
- Spent lead acid batteries managed under 40 CFR 266, Subpart G.
- Universal waste managed under 40 CFR 261.9 and 40 CFR Part 273.

B&V will coordinate with the subcontractor in keeping the monthly amount of hazardous waste generated to less than 220 pounds of hazardous waste or 2 pounds of acute hazardous waste.

If the amount of hazardous waste generated onsite in one calendar month exceeds 220 pounds of hazardous waste or 2 pounds of acute hazardous waste, B&V will develop a Site Hazardous Waste Management Plan for the overall site that must be followed by the subcontractor. The subcontractor will develop its own Hazardous Waste Management Plan for activities that interface with the B&V Site Hazardous Waste Management Plan. The Site Hazardous Waste Management Plan will address the following:

- Requirements for container labeling.
- Personnel training.
- Preparedness and prevention.
- Emergency procedures.
- Waste analysis plans when treating hazardous waste onsite to meet the land disposal restriction treatment standards.

5.3.2.3 Notification of Waste Generating Activities. When more than 220 pounds of hazardous waste or 2 pounds of acute hazardous waste are generated per calendar month, B&V is responsible for ensuring that the state environmental agency or the United States Environmental Protection Agency (USEPA) is notified of onsite regulated waste activities.

B&V will determine if there is any specific state or local requirements for notifications for generating hazardous waste.

5.3.2.4 Identification Number. B&V will determine if there are any requirements for notifying agencies of hazardous waste generation activity and obtaining an identification number. The Owner is responsible for obtaining the required identification number, in coordination with B&V. B&V will provide the EPA identification number to subcontractors.

As a minimum, the USEPA identification must be obtained from the USEPA or state environmental agency when any of the following conditions exist:

- More than 220 pounds of hazardous waste or 2 pounds of acute hazardous waste are produced per month,
- Hazardous waste is disposed,
- Hazardous waste is offered for transport, or
- More than 11,000 pounds of universal waste is accumulated at any one time.

A USEPA identification number must be obtained using USEPA Form 8700-12, Notification of Regulated Waste Activity or equivalent.

5.3.2.5 Hazardous Waste Collection. Containers used to collect hazardous wastes must be labeled with the subcontractor's name and the date on which filling of the container began. In addition, the container must be marked as "hazardous waste" and must include the specific type of waste it contains.

Containers used to store and transport hazardous waste must be compliant with 49 CFR.

Containers used to collect hazardous waste must be equipped with a cover and closure device that forms a continuous barrier over the container.

When a defect is detected in the container, cover, or closure device, efforts shall be made to repair the defect within 24 hours. In no case will the defect be permitted to exist for longer than 5 days without removing the hazardous chemicals from the container.

Up to 440 pounds (55 gallons) of hazardous waste or 2 pounds (1 quart) of acute hazardous waste may be accumulated in containers located close to, and under the control of, the source generating the waste. Containers used to collect hazardous waste at the points of generation must be moved to the accumulation (storage) area when full or when an activity generating the waste is complete.

5.3.2.6 Hazardous Waste Container Labels and Markings. Containers of hazardous waste offered for transport must be marked with the following words and information:

- HAZARDOUS WASTE--Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the US Environmental Protection Agency.
- Generator's Name and Address.
- Generator's EPA Identification Number.
- Manifest Tracking Number.

5.3.2.7 Hazardous Waste Secondary Containment. Containers of hazardous waste containing free liquids, regardless of size, must be provided with secondary containment. Secondary containment must be designed, installed, and operated to prevent the 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. Refer to Subsection 5.2.1.5 for secondary containment requirements.

5.3.2.8 Hazardous Waste Empty Container Rule. A container is considered empty and not counted toward hazardous waste limits regardless of what the container previously held if the following occurs:

- All practical means are used to empty the container, such as pouring, pumping, aspirating, etc., and no more than 1 inch of residue remains on the bottom of the container or liner when the container is less than 110 gallons in capacity, or no more than 0.3 percent by weight of the total capacity of the container remains in the container or liner when the container is greater than 110 gallons in capacity.
- A container that held compressed gas is considered empty when the pressure in the container approaches atmospheric pressure.
- A container or liner of a container that held an acute hazardous material is empty following a triple rinse with a solvent capable of removing the hazardous material.

Rinsates of Resource Conservation and Recovery Act (RCRA) empty containers may be discharged to a publicly owned water treatment plant (POWTP) providing the discharge meets pretreatment standards.

5.3.2.9 Hazardous Waste Storage. Full containers of hazardous waste may not accumulate longer than 90 days before it is transported offsite for proper disposal at a treatment storage or disposal facility. At no time will more than 1,600 pounds (200 gallons) of hazardous waste be accumulated before arranging for transport, storage, or disposal.

Note: This upper limit may be less if the client wants to maintain specific generator status or meet established goals.

5.3.2.10 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 B&V. 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 are minimized and mitigated. All wastes from the sediment barrier system will be managed in accordance with this 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.

C&D 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 or runoff 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. Recycled scrap metal is exempt from the hazardous waste requirements.

5.3.2.11 Disposal. Scrap metal will be screened for radiation levels as required by the scrap metal facility or disposal facility. Person taking the radiation screen must be qualified.

5.3.2.12 Disposal. Solid waste will be collected and disposed in accordance with local rules and regulations.

Hazardous waste, PCB waste, and asbestos waste will not be disposed in municipal landfill without the landfill owner and B&V approval.

5.3.2.13 Recycling. Recycling is encouraged for paper products as well as other materials, such as chemicals, batteries, glass, metals, aluminum, and plastic, if it is economically feasible.

5.3.2.14 Hazardous Waste Inventory. The subcontractor's representative will report on the amount of hazardous waste generated from site activities on the Loss Management Monthly Summary Report (Figure 2).

5.3.2.15 Hazardous Waste Disposal. Hazardous wastes must be shipped to a designated facility that treats, recycles, or disposes of a particular type of hazardous waste. Prior to sending a shipment of hazardous waste offsite, the subcontractor must notify the receiving facility and secure an agreement of acceptance. The agreement will be in writing. A copy of the written agreement will be submitted to B&V by the fifth of the month.

Rinsates of RCRA empty containers are not hazardous waste and may be disposed to a POWTP providing the discharge to the POWTP meets pretreatment requirements.

5.3.2.16 Hazardous Waste Transportation. Before the waste is transported offsite, it must be packaged in accordance with USDOT 49 CFR Parts 173, 178, and 179.

Before the waste is transported offsite, each package must be labeled in accordance with USDOT 49 CFR Part 172 and USEPA 40 CFR 262.

Before containers less than 110 gallons in capacity are transported offsite, each package or container must be marked in accordance with 49 CFR 172.304 and USEPA 40 CFR 262.

When hazardous waste is transported or offered for transport for offsite treatment, storage, or disposal, USEPA Form 8700-22, or a manifest equivalent to this form must be completed prior to transport.

Copies of the signed manifest must be provided to B&V at the time the hazardous waste is shipped offsite and at the time the hazardous waste is received at the designated facility.

Before hazardous waste is transported offsite, a placard, in accordance with 49 CFR Part 172, Subpart F, will be offered to the initial transporter.

The subcontractor will provide B&V the USEPA identification number and license number, and a copy of the transporter's license of the transporter of hazardous waste before loading the shipment.

5.3.2.17 Recordkeeping of Waste Disposal. The following records will be retained in the project files:

- Copies of each signed manifest.
- Copies of test results, waste analysis, or other hazardous waste determinations for 10 years.
- Copies of daily and weekly inspection reports.
- Written agreement with waste disposal firms.

5.3.3 Universal Wastes

Universal wastes are hazardous wastes that may be managed using less restrictive practices. Each state defines universal waste differently.

Universal wastes typically include batteries, pesticides, mercury-containing equipment, and lamps.

All universal waste must be managed in a way that will prevent a release to the surrounding environment.

5.3.31 Containers. Universal wastes must be stored in a container that remains closed, is structurally sound, is compatible with the contents, and lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

5.3.3.2 Labeling/Marking. The collection or storage container or the individual item must be marked as follows:

Universal Waste Type	Waste Label Wording
Batteries	Universal Waste - Batteries
Pesticide	Original FIFRA label, USDOT label, Universal Waste - Pesticide(s)
Mercury-Containing Equipment	Universal Waste - Mercury-Containing Equipment
Lamps	Universal Waste - Lamp(s)

5.3.3.3 Storage. Universal wastes cannot be stored onsite for more than 1 year. Subcontractors must be able to demonstrate the length of time the universal waste has been accumulating by marking the collection start date on the collection or storage container or individually marking each item with the date it became a waste.

5.3.3.4 Employee Training. Workers who handle universal waste or have responsibility for universal waste must be informed of proper handling and emergency procedures.

5.3.3.5 Disposal. Universal wastes must be shipped to a designated facility that treats, recycles, or disposes of a particular type of universal waste. Prior to sending a shipment of universal waste offsite, the subcontractor must notify the receiving facility and secure an agreement of acceptance. The agreement will be in writing. A copy of the written agreement will be submitted to B&V by the fifth of the month.

5.3.3.5.1 Batteries. With the exception of the following, batteries are managed as a universal waste:

- Spent lead acid batteries managed under 40 CFR Part 266, Subpart G.
- Batteries that are classified as a characteristic hazardous waste identified in 40 CFR 261, Subpart C.

Waste batteries that show evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions must be stored in a container. The container must be closed; structurally sound; compatible with the contents of the battery;

and must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

The following activities are permitted as long as the casing of each individual battery cell is not breached and remains intact and closed (cells may be opened to remove electrolyte, but must be immediately closed after removal):

- Sorting batteries by type,
- Mixing battery types,
- Discharging batteries,
- Regenerating used batteries,
- Disassembling batteries or battery packs,
- Removing batteries from consumer products, or
- Removing electrolyte from batteries.

Subcontractors will dispose of spent lead acid batteries via an authorized recycler. Unsealed lead acid batteries that are not recycled will be treated as a hazardous waste.

5.3.3.5.2 Pesticides. Pesticides are managed as a universal waste.

Subcontractors applying a USEPA restricted use pesticide on the construction site must use certified pesticide applicators.

Subcontractors applying a restricted use pesticide on the construction site must present to B&V a copy of the applicator's pesticide applicator certification or license before application of the pesticide.

Pesticides stored onsite 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.

5.3.3.5.3 Lamps. Lamps are managed as a universal waste, are defined as the tube portion of an electrical lighting device, and include the following:

- Fluorescent bulbs.
- High intensity discharge lamps.
- Neon lamps.
- Mercury vapor lamps.
- High-pressure sodium lamps.
- Metal halide lamps.

Lamps for the purpose of this section do not include those that exhibit one or more characteristics of hazardous waste including ignitability, corrosivity, reactivity, or toxicity.

Lamp drum-top crushing devices or similar devices that crush the lamp for volume reduction are not permitted.

Broken lamps must be cleaned up immediately and disposed of in a container that is structurally sound and suitable for any waste lamp. Containers must prevent the release of metal vapors (e.g., mercury, sodium) during storage and disposal.

5.3.3.5.4 Mercury-containing equipment. Mercury-containing equipment is managed as a universal waste and includes devices, items, or articles that contain varying amounts of elemental mercury. Mercury-containing equipment includes the following:

- Thermometers.
- Manometers.
- Barometers.
- Relay switches.
- Mercury regulators.
- Meters.
- Pressure gauges.
- Sprinkler system contacts.
- Silent switches.

Mercury Handling Procedures. When elemental mercury is handled onsite, the following handling procedures must be followed:

- Transfer of mercury must be done over or in a containment device (e.g., tray or pan sufficient to collect and contain any released mercury).

Mercury cleanup kits must be available at the following locations:

- The site of the transfer operation.
- In the storage area.

Mercury cleanup will never include the following practices:

- Use of a vacuum or broom to clean up mercury. Doing so creates a greater hazard to exposure.
- Washing mercury contaminated clothing in home washing machines.

5.3.4 Oil Management

5.3.4.1 Used Oil. Types of oil include, but are not limited to, the following:

- Petroleum.
- Fuel oil.
- Sludge.
- Oil refuse.
- Oil mixed with waste other than dredged soils.
- Fats.
- Animal fats.
- Vegetable oils.
- Synthetic oils.
- Mineral oils.

5.3.4.2 Used Oil Management.

5.3.4.2.1 Source. Used oil is defined as any oil that has been refined from crude oil or any synthetic oil that has been used, and as a result of use or as a consequence of extended storage or spillage, has been contaminated with physical or chemical impurities.

Used oil must not contain more than 1,000 parts per million (ppm) of total chlorinated hydrocarbons or risk being presumed as a hazardous waste as defined in Sub-section 5.3.4.5, Presumption of Hazardous Waste.

If the used oil waste is free of flowing oil (free of liquids), it is a solid waste unless it is used for energy recovery as used oil.

Used oils include, but are not limited to, those listed in Table 5-1. Used oils combined with hazardous wastes must be managed as hazardous wastes. In some states, used oil is classified as a hazardous waste and must be managed as one. Oil-like materials that are not used oils include those listed in Table 5-2.

5.3.4.2.2 Prohibited Uses for Used Oil. Used oils are prohibited from the following:

- Used as dust suppressant (road oiling).
- Used as insect or weed control.
- Disposed of on land or to sewers and other water systems.
- Burned as a fuel or incinerated.
- Disposed of in public used oil collection centers.
- Mixed with oil generated from houses or other sources, since this would require further testing for halogens to counter the presumption of the used oil being a hazardous waste.

5.3.4.2.3 Container Labels and Markings. Tanks and containers holding used oil must be labeled with the words "Used Oil," the initial date of accumulation, and the name and address of the generator.

5.3.4.2.4 Presumption of Hazardous Waste. Used oil containing greater than 1,000 ppm total halogen is presumed to be hazardous waste unless it can be demonstrated that the used oil has been managed in a manner that prevented the introduction of halogenated hydrocarbons.

Table 5-1 Examples of Used Oil
Vehicular crankcase oils
Engine lubricating oils
Transmission fluids
Gearbox and differential oils
Used industrial oils
Hydraulic oil
Compressor oil
Turbine oil
Bearing oil
Gear oil
Transformer (electrical) oil
Metal working oils

Table 5-2 Oil-Like Materials That Are Not Used Oils
Antifreeze
Brake fluid
Other vehicular wastes
Fuels (gasoline, diesel, kerosene, etc.)
Grease
Solvents
Oils with a flash point below 140° F
Oils contaminated with more than 1,000 ppm total halogens, unless the presumption is rebutted
Oils mixed with hazardous wastes
Wastewater containing small amounts of used oils
Oils containing 5 ppm or greater of polychlorinated biphenyls (PCBs)
Tank bottoms
Used oil processing bottoms
Used oil rerefining bottoms

5.3.4.2.5 Offsite Shipment of Used Oil. The subcontractor that generates the used oil must transport the used oil to a used oil collection center that is registered, licensed, permitted, or recognized by a state/county/municipal government to dispose of or recycle used oil. Containers of used oil being transported to a used oil collection center must not exceed 55 gallons.

5.3.4.2.6 Used Non-Terne Plated Oil Filter Management. Unless the used oil is hot drained as described below, the used oil filter (with residual oil) is a solid waste and must have a hazardous waste determination.

Before disposing of used oil filters in the solid waste stream, the oil filter shall be hot drained in the following manner:

- Hot drain all free flowing oil from the oil filter.
- Properly contain the used oil filters.
- Properly label the container as "Used Oil Filters."
- Transport to a licensed facility.
- Transport under a bill of lading with a copy provided to B&V.
- Manage the oil removed from the filters as used oil.

Oil filters that are hot drained and crushed are defined as process scrap metal and are excluded from the definition of solid waste if recycled.

5.3.4.2.7 Spill Prevention and Control. A Spill Prevention, Control, and Countermeasure Plan must be developed by a professional engineer and implemented by subcontractors when the following criteria are met:

- Site stores, uses, transfers, or otherwise handles oil.
- Site has a maximum aboveground storage capacity greater than 1,320 gallons of oil (which includes both bulk and operational storage volumes) or total underground storage capacity greater than 42,000 gallons of oil, counting only those containers with capacities of at least 55 gallons.
- There is a reasonable expectation (based on the location of the site) that an oil spill would reach navigable waters or adjoining shorelines of the United States.
- It stores PCB-containing equipment or materials.

5.3.4.2.8 Oil Spill Definition. An oil 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.

If the oil spill has the potential to harm people offsite, the SERC and the LEPC or the local fire department must be notified.

5.3.5 PCB Management

5.3.5.1 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 5-3.

5.3.5.2 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.

5.3.5.3 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 subcontractor will notify B&V as soon as possible. Work area will be barricaded. Work will not resume until authorization is provided by the Owner that the area is free of PCBs.

5.3.6 Contaminated Soils

5.3.6.1 Materials Management Plan. When contaminated soils are known to exist at the site, the subcontractor will develop a Materials Management Plan. The plan will describe how the subcontractor 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.

Table 5-3 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

- Sampling and analysis.
- Transportation.
- Disposal.

5.3.6.2 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 subcontractor will immediately stop work and notify B&V. B&V will notify the Owner and determine if there is a need to make further notifications. B&V will decide if the soils need to be sampled to determine the presence and degree of contamination. The sampling performed by B&V shall not relieve the subcontractor 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 subcontractor before work resumes.

5.3.6.3 Notification. B&V will immediately be notified.

B&V will notify the Owner. Any necessary report or notification to governmental agencies is the responsibility of the Owner.

B&V will make the notification to the Owner and government agencies as soon as possible unless previous arrangements have been made for the Owner to make the notifications.

B&V will immediately notify the Project Manager who will coordinate further communications of the release in accordance with the B&V Crisis Communication Plans.

5.3.6.43 Stockpile. Subcontractor 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 that 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.

Subcontractor 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 subcontractor will maintain the sheeting and needs to repair damage and replace displaced cover sheeting. Subcontractor 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.

5.4 Wastewater and Storm Water Management

5.4.1 Dewatering

All water from dewatering activities will be collected, tested, and disposed of in accordance with applicable permits and regulations

5.4.2 Water Discharge

All discharges of water to the ground, surface waters, groundwater, wetlands, sewers, drains, or ditches or swales that lead to surface water, must be done under an NPDES permit.

The Contractor will notify B&V whenever there is a water discharge in excess of 30 gallons. The Water Discharge Notification Form (Figure 37) must be provided to B&V prior to the discharge of water.

In the event that the discharge was unexpected or unplanned, the Water Discharge Notification Form (Figure 37) must be submitted to B&V within 24 hours of the discharge of water.

5.4.3 Concrete Waste Management

5.4.3.1 Concrete Washout Area. Subcontractor shall require concrete washouts to be performed offsite whenever possible. Onsite 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 B&V.

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. Subcontractors must perform onsite 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 offsite.

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. Subcontractor will post a sign adjacent to each temporary concrete washout facility to inform concrete equipment operators to utilize the proper facilities.

5.4.4 Storm Water Management

5.4.4.1 Spills and Releases Controls. Every construction project disturbing more than 1 acre of land will have a Storm Water Pollution Prevention Plan. The subcontractor must comply with all provisions and requirements of the plan. The subcontractor is responsible for protecting storm drains, open ditches, water bodies, or wetlands from receiving contaminated liquids through the use of flow control devices such as absorbents and dikes.

5.4.4.2 Erosion and Sediment Controls. Storm drains, open ditches, water bodies, or wetlands will be protected from receiving sediment-laden runoff through the use of sediment control devices such as 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.

Silt and sediment removed may be placed and stabilized on designated site in a manner that does not foul existing or proposed storm drainage systems.

5.4.4.3 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, subcontractor will sweep or vacuum the street to remove the mud, dirt, or sediments.

5.4.4.4 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 offsite facilities.
- Washing in designated contained areas only.
- Wash without the use of detergents or soaps.
- Eliminating discharges to the inlets/drains by filtering the wash water.
- Training employees and subcontractors in proper cleaning procedures.

5.5 Air Emissions and Odor Control

5.5.1 Vehicle Exhaust

Subcontractor 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. Subcontractor 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.

5.5.2 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.

Subcontractor 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. Subcontractor 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.

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 B&V or the Owner 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 subcontractor.

Burning of wastes or unwanted materials will not be permitted onsite.

5.5.3 Odor

In residential areas or other locations where the public would be exposed, the subcontractor will minimize the release of objectionable odors.

5.6 Site Clearing and Resource Protection

5.6.1 Vegetation and Site Clearing

Areas that are not to be disturbed during construction activities will be marked by the subcontractor 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 subcontractor will report damage to trees or shrubs to B&V within 24 hours of discovery. Temporary roadways, stockpiles, and lay down areas will be located to avoid stand of tress, shrubs and grass.

5.6.2 Threatened and Endangered Species

When the subcontractor 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 B&V must be notified immediately. B&V will not permit work to continue until it has been determined that the subcontractor's activities will not impact threatened or endangered species.

5.6.3 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 subcontractor will immediately notify B&V. B&V will notify Owner and determine if there is a need to make further notifications.

Construction will only proceed in the affected area after the Owner and B&V has reviewed the discovery and has authorized construction activities to resume.

5.6.4 Human Remains Discoveries

If bones or other evidence of human remains are identified during construction, the subcontractor will immediately stop work on activities that could further harm the remains and will immediately notify B&V. 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, subcontractor 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 the Owner who will be responsible for managing the discovery. Work will not resume until authorized by Owner and B&V.

5.7 Noise Control

Subcontractor 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 onsite 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.

5.8 Community Relations

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.

5.8.1 Responsibilities

Owner and B&V have overall responsibility for undertaking all communications with outside third parties. Subcontractors receiving complaints onsite will immediately contact B&V, who will report the complaints to Owner.

5.8.2 Management Measures

B&V and Owner 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 subcontractor will notify B&V, who will notify Owner in advance. Owner will, in turn, notify all affected neighbors.

Complaints from neighbors or other parties will be treated seriously and the cause will be fully investigated. B&V will log the complaint and, when appropriate, remedial action will be taken. The complainant will be informed by Owner 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.

5.8.3 Documentation

B&V 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. B&V will maintain copies of all correspondence from Owner regarding complaints with neighbors onsite for the duration of the project.

5.9 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.

5.10 Permit Conditions and Approval Requirements

Subcontractor will identify all relevant federal, state, and local permits or permit modifications or certifications needed to implement the construction activity.

Subcontractor 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 subcontractor environmental operations program.

6.0 Figures

- Figure 1 Designation of Competent Persons (PLC-27A)
- Figure 2 Loss Management Monthly Summary (PLC-37D)
- Figure 3 Safety Task Assignment (STA) Report (PLC-41)
- Figure 4 Weekly Safety Meeting Report (PLC-16A)
- Figure 5 First Aid Log (PLC-21)
- Figure 6 Resource and Emergency Contact List (New)
- Figure 7 Job Hazard Analysis Policy (PLC-20A)
- Figure 8 Daily Work Area Inspection Checklist (PLC-45B)
- Figure 9 Safety, Health, and Environmental Violation Notice (PLC-11A)
- Figure 10 Personal Violation Notice (PLC-12A)
- Figure 11 Danger Tag (PLC-38)
- Figure 12 Accident/Illness Investigation Report (PLC-01)
- Figure 13 Fire Extinguisher Inspection Log (PLC-43)
- Figure 14 GFCI Testing Log (PLC-44)
- Figure 15 Monthly Crane Inspection Report (PLC-10)
- Figure 16 Combustible and Flammable Material Storage Requirements (PLC-24)
- Figure 17 Scaffold Tags (PLC-05)
- Figure 18 Confined Space Entry Permit (PLC-08)

- Figure 19 Trench and Excavation Notice (PLC-13)
- Figure 20 Welding and Cutting Permit (PLC-18)
- Figure 21 Steel Erection Checklist (PLC-53)

Figure 22 Concrete and Anchor Bolt Release Form (PLC-54)

- Figure 23 Perimeter Guardrail Turnover Form (PLC-55)
- Figure 24 Project Safety and Health Rules (Employee Handout) (PLC-29)
- Figure 25 Operator's Daily Checklist (PLC-39)
- Figure 26 First Aid Responder List (PLC-42)
- Figure 27 Telephoned Bomb Threat Checklist
- Figure 28 Security Regulations (PLC-30)
- Figure 29 Work Rules Receipt (PLC-32)
- Figure 30 Identification Badge Envelope (PLC-31)
- Figure 31 After Hours Access Request (PLC-02)
- Figure 32 Vehicle Pass Application (PLC-14)
- Figure 33 Drug and Alcohol Test (Form Letter) (PLC-46)
- Figure 34 Authorized Signature Card (PLC-03)
- Figure 35 Equipment and Material Removal Permit (PLC-09)
- Figure 36 Environmental Incident Report (PLC-01B)
- Figure 37 Water Discharge Notification Form (PLC-84)

Appendix

Appendix 1: Environmental Permits

Appendix 2: Later

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DESIGNATION OF COMPETENT PERSONS

Project No. _____ Project Name _____ Date _____

Site _____ Contractor _____ Filed by _____

OSHA Standard	Applies to Contractor (Yes/No)	Designated Competent Person Employee Name
Subpart C--General Provisions		
1926.20 General Safety		
Subpart D--Health and Environmental Controls		
1926.53 Ionizing Radiation		
1926.54 Nonionizing Radiation		
1926.55 Gases, Vapors, Fumes, Dusts, Mists		
1926.57 Ventilation		
1926.59 Hazard Communication		
1926.62 Lead		
Subpart E--Personal Protective Equipment		
1926.101 Hearing		
1926.103 Respirator Protection		
Subpart H--Materials Handling, Storage		
1926.251 Rigging Equipment for Material Handling		
Subpart J--Welding and Cutting		
1926.354 Welding, Cutting, and Heating		
Subpart K--Electrical		
1926.404 Wiring Design and Protection		
Subpart L--Scaffolding		
1926.451 Scaffolding		
Subpart M--Fall Protection		
1926.502 Fall Protection Criteria and Practices		
1926.503 Training		
Subpart N--Cranes, Derricks		
1926.550 Cranes and Derricks		
1926.552 Hoists and Elevators		

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DESIGNATION OF COMPETENT PERSONS (Continued)

OSHA Standard	Applies to Contractor (Yes/No)	Designated Competent Person Employee Name
Subpart O--Motor Vehicles and Equipment		
1926.601 Motor Vehicles		
Subpart P--Excavations		
1926.651 Specific Excavation Requirements		
1926.652 Requirements for Protective Systems		
Subpart Q--Concrete and Masonry Construction		
1926.701 General Requirements		
1926.703 Cast-In-Place Concrete		
1926.705 Lift-Slab Operations		
Subpart R--Steel Erection		
1926.752 Bolting, Riveting, Fitting-Up, etc.		
Subpart S--Tunnels, Shafts, Caissons		
1926.800 Tunnels and Shafts		
1926.802 Compressed Air		
Subpart T--Dismantling		
1926.850 Preparatory Operations		
1926.852 Chutes		
1926.859 Mechanical Dismantling		
Subpart U--Blasting and Use of Explosives		
1926.900 General Provisions		
1926.901 Blaster Qualifications		
1926.911 Misfires		
Subpart V--Power Transmission and Distribution		
1926.955 Overhead Lines		
1926.957 Construction in Energized Substations		
Subpart X--Stairways and Ladders		
1926.1053 Ladders		
1926.1060 Training Requirements		
Subpart Z--Toxic and Hazardous Substances		
1926.1101 Asbestos		
1926.1102 thru 1926.1148 Toxic and Hazardous Substances		

LOSS MANAGEMENT MONTHLY SUMMARY

B&V Info | Sub Info | Totals

Project/ Office Name	Project No.	Contact Name	Project Manager's Name	% Complete	Sector/Division	Region	Business Line	OCI/BVCI/ International		No. of Employees	Man-Hours Worked	Days Away From Work Cases	Restricted/Transferred Cases	All Other Recordables	Total	Days Losts	First Aid Cases	Near Miss Cases	Vehicle Accidents	Pre-Employment	Failures	% Failure	Post-Accident	Failures	% Failure	Probable Cause	Failures	% Failure	Random	Failures	% Failure	Personal Violations	Company Violations	Incident Rate	Days Away From Work Rate
									Monthly						0							0.00%			0.00%			0.00%			0.00%			0.00	0.00
Month/Year:									Year-to-Date						0							0.00%			0.00%			0.00%			0.00%			0.00	0.00
									Project-to-Date						0							0.00%			0.00%			0.00%			0.00%			0	0

****Fill Out Blue and Green Sections Only****

Subcontractor Information

	No. of Employees	Man-Hours Worked	Days Away From Work Cases	Restricted/Transferred Cases	All Other Recordables	Total	Days Losts	First Aid Cases	Near-Miss Cases	Vehicle Accidents	Pre Employment	Failures	% Failures	Post-Accident	Failures	% Failures	Probable Cause	Failures	% Failures	Random	Failures	% Failures	Personal Violations	Company Violations	Incident Rate	Days Away From Work Rate
Monthly						0							0.00%			0.00%			0.00%			0.00%			0.00	0.00
Year-to-Date						0							0.00%			0.00%			0.00%			0.00%			0.00	0.00
Project-to-Date						0							0.00%			0.00%			0.00%			0.00%			0.00	0.00

Total Information

	No. of Employees	Man-Hours Worked	Days Away From Work Cases	Restricted/Transferred Cases	All Other Recordables	Total	Days Losts	First Aid Cases	Near-Miss Cases	Vehicle Accidents	Pre-Employment	Failures	% Failures	Post-Accident	Failures	% Failures	Probable Cause	Failures	% Failures	Random	Failures	% Failures	Personal Violations	Company Violations	Incident Rate	Days Away From Work Rate
Monthly	0	0	0	0	0	0	0	0	0	0	0		0.00%	0		0.00%	0		0.00%	0		0.00%	0	0	0.00	0.00
Year-to-Date	0	0	0	0	0	0	0	0	0	0	0		0.00%	0		0.00%	0		0.00%	0		0.00%	0	0	0.00	0.00
Project-to-Date	0	0	0	0	0	0	0	0	0	0	0		0.00%	0		0.00%	0		0.00%	0		0.00%	0	0	0.00	0.00

Decription of OSHA Recordable Injuries/Illnesses:

Contractor's Name	Recordable/Days Away From Work/ Restricted Duty Case	Body Part	Cause/Injury	Description

Near-Miss Cases:

Contractor's Name	Description

Figure 2

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ZA-1 Project
Safety Task Assignment

Rev. 20090116

Project Name/Number:	Location:	MASTER JHA(s) #:
Foreman:	Date:	Time:

Description of Work: _____

Sequence of Basic Job Steps	Potential Hazards (Circle)	Recommended Action or Procedures
	SB, CW, CBy, CB, SA, CI, CO, O, FS, FB, E, EE	
	SB, CW, CBy, CB, SA, CI, CO, O, FS, FB, E, EE	
	SB, CW, CBy, CB, SA, CI, CO, O, FS, FB, E, EE	
	SB, CW, CBy, CB, SA, CI, CO, O, FS, FB, E, EE	
	SB, CW, CBy, CB, SA, CI, CO, O, FS, FB, E, EE	
	SB, CW, CBy, CB, SA, CI, CO, O, FS, FB, E, EE	
	SB, CW, CBy, CB, SA, CI, CO, O, FS, FB, E, EE	
	SB, CW, CBy, CB, SA, CI, CO, O, FS, FB, E, EE	

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., EE = Energized Electrical Exposure.

Tools & Equipment:
List the tools and equipment needed to complete today's tasks:

_____ _____
_____ _____
_____ _____

Site Activities / Adjacent Work:
Activities which may impact our tasks:

_____
_____

Emergency Procedures	Evacuation Procedures
Emergency Phone Number:	**Primary Muster Point:**
Emergency Clinic/Hospital Location:	**Secondary Muster Point:**

Weather Conditions	Ground Condition	Temperature	Job Impact
☐Sunny ☐Cloudy ☐Rainy ☐Snow – Accumulation: in. ☐Windy > 10 mph ☐Other:	☐Dry ☐Wet ☐Muddy ☐Snow/Ice – Covered within. ☐Other:	☐≤ 0° F ☐0-32° F ☐32-45° F ☐45-60° F ☐60-80° F ☐80-90° F ☐90+° F ☐Humidity _____ _____%	☐Rain out ☐Snow out ☐Severe Storm ☐Other _____
Today's weather forecast: _____ _____			

Corrective Actions Taken if Required

What Issues I Found	What I Did to Correct Issue

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 Prot:_____
- ☐ 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 Info/Equipment Location
- ☐ Fire Extinguishers/ Current Inspection
- ☐ Safety Shower / Eyewash
- ☐ Evacuation Route
- ☐ MSDS Review
- ☐ CPR / First Aid

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 Inches- 200lbs.
- ☐ Mid-rail 21" +/- 3 Inches

Excavations
- ☐ Properly barricaded
- ☐ Shoring / Sloping / Benching required (5ft)
- ☐ Proper access (4ft)
- ☐ 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_____

General
- ☐ Flammable Storage
- ☐ Appropriate Signage posted
- ☐ Slip/Trip Hazards identified
- ☐ Housekeeping In Order

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_____

Electrical
- ☐ GFCI test
- ☐ Extension cord inspections
- ☐ Cords routed out of walkways/ 7' above ground
- ☐ Electrical tool inspected
- ☐ Lighting
- ☐ Other_____
- ☐ Minimum approach distance considered

Scaffolding/Ladder
- ☐ Tied Off
- ☐ Inspected by competent person
- ☐ Tagged
- ☐ Proper ladder selected
- ☐ Fall Protection for Over 12' Climb
- ☐ Other_____

Identification of Site Hazards:			AC Minimum Approach Distance		
Physical Hazards	**Health Hazards**	**Site Security**	**Voltage in kilovolts (kV)**	**Qualified**	**Non-Qualified**
☐ Falls from elevations	☐ Heat Stress	☐ Inner City	0.05 to 1.0	Avoid Contract	10'0"
☐ Slip, Trip, Falls	☐ Cold Stress	☐ Night Work	1.1 to 15.0	2'1"	10'0"
☐ Vehicle Traffic	☐ Chemical Exposure	☐ Rural	15.1 to 36.0	2'4"	10'0"
☐ Electrical Shock	☐ Radio Frequency (RF) (EME)	☐ Lighting	36.1 to 46.0	2'7"	10'0"
☐ Underground Utilities	☐ Noise Exposure (> 85 dBA)	☐ Building / Roof Top Access	46.1 to 72.5	3'0"	10'9"
☐ Trash / debris / dunage	☐ Hexchrome / Arsenic	☐ Other:	72.6 to 121	3'2"	12'5"
☐ Rough Terrain	☐ Lead / Asbestos	☐ Other:	138 to 145	3'7"	13'2"
			161 to 169	4'0"	14'0"
			230 to 242	5'3"	16'5"
			345 to 362	8'6"	20'5"
			500 to 550	11'3"	26'8"
			765 to 800	14'11"	35'0"

Figure 3

Crew Sign Off (Signature means you have participated in the STA and understand the safety aspects of your assignment)

Print	Sign	Post Initials

Employee Comments

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 yes, please explain below:

3. Any injuries / Near Miss incidents / Property Damage incidents to Report? ☐ Yes ☐ No If yes, please explain below:

Supervisor/Foreman: _____ _____ _____
Print / Sign **Date** **Time**

Supervisor/Safety Review

Received/Reviewed by: _____ _____ _____
Print / Sign **Date** **Time**

Figure 3

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ZA-1 Project
WEEKLY SAFETY MEETING REPORT

BVCI File No.: _____

Site: _____ Contractor: _____

Date: _____ 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

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ZA-1 Project
CHECK SUBJECTS YOU DISCUSS

- ☐ Abrasive Wheels
- ☐ Accident Reporting
- ☐ Air Hoses
- ☐ Air Tools
- ☐ Arc Welding
- ☐ Backing Equipment
- ☐ Backup Alarms
- ☐ Batteries
- ☐ Blasting & Explosives
- ☐ Blocking
- ☐ Carbon Monoxide
- ☐ Chemical Handling
- ☐ Clothing
- ☐ Concrete Burns
- ☐ Confined Entry
- ☐ Connecting & Bolting
- ☐ Conveyors
- ☐ Cranes
  - ☐ Chokers & 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
- ☐ Equipment Maintenance
- ☐ Excavations
- ☐ Eye Protection
- ☐ Defective Equipment
- ☐ Dismounting Equipment
- ☐ Drinking and Drugs
- ☐ Dust
- ☐ Fall Protection
  - ☐ Floor Openings
  - ☐ Guardrails
  - ☐ Safety Belts & Lanyards
  - ☐ Safety Lines
  - ☐ Safety Nets
  - ☐ Scaffolding
  - ☐ Skip Boxes
- ☐ Fire
  - ☐ Extinguishers
  - ☐ Fueling
  - ☐ Gasoline
  - ☐ Safety Cans
  - ☐ Welding & 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 & Ice
- ☐ Steps
- ☐ Stripping
- ☐ Telephone Cables
- ☐ Theft
- ☐ Traffic Controls
  - ☐ Flagmen
  - ☐ Flashers
  - ☐ Reflectorized Vests
  - ☐ Signs & 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

Start Planning Your Next Safety Meeting

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ZA-1 Project
FIRST AID LOG

Date	Name	Foreman	Part Affected	Inj. Date	Company	Cause	Recommendation

Figure 5

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RESOURCE AND EMERGENCY CONTACT LIST

Company	Position	Name	Department	Function	Office Phone	Cell Phone	Email
Black & Veatch (B&V)	Project Manager	Eric Cosgrove	Management	Management	503-443-4435		cosgroveEP@bv.com
B&V	Field Project Manager	Dave Turkington	Management	Management	925-556-2214	916-716-5576	turkingtondl@bv.com
B&V	Construction Manager	Joe Tolar	Management	Management		201-234-9976	tolarjw@bv.com
B&V	Project Safety Manager	Albert Salinas	Safety	Safety		217-685-1476	salinasA@bv.com
B&V	Regional Safety Manager	Mike Levine	Safety	Safety	925-556-2222	510-862-8567	levinemi@bv.com
B&V	General Counsel	Tim Triplett	Legal	Legal Issues	913-458-4258		
B&V	Corporate Security Manager	John Kendall	Security	Security	913-458-6597	913-523-4164	kendalljr@bv.com
B&V	VP, Corporate Environmental, Safety, Health and Security Services	John H. Johnson	Safety	Safety	913-458-8225		johnsonjh@bv.com
B&V	Manager Industrial Hygiene and Operational Environmental Service	Jack Schill	Safety	Industrial Hygiene	802-644-2841 (preferred means)	816-718-5779 (limited coverage)	schillj@bv.com
B&V	Director of Media Relations	Fredrik Winterlind	Communications	Media Communications	913-458-3500		winterlindfa@bv.com
B&V	Director of Corporate Communications	Carl Petz	Communications	Media Communications	913-458-4685	913-484-9581	petzcf@bv.com
B&V	Senior Manager of Media Relations	George Minter	Communications	Media Communications	913-458-8001	-	minterga@bv.com
B&V	Human Resource Manager	Terry Maes	HR	HR	925-556-2224		maest@bv.com
B&V							
B&V							

RESOURCE AND EMERGENCY CONTACT LIST

Company	Position	Name	Department	Function	Office Phone	Cell Phone	Email
B&V							
B&V							
B&V							
B&V							
B&V							
B&V				Wetland SME			
B&V				Etc.			
B&V							
	Fire						
	Local Police						
	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				

Company	Position	Name	Department	Function	Office Phone	Cell Phone	Email
	Historic Preservation Office		State				
	Health		State				
	Planning		Local				
	LEPC		Local				
	SERC		State				
Services	Hazardous Materials						
	Remediation Firm						
	HAZMAT Response Team						
	Environmental Laboratory Services						

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ZA-1 Project
JOB HAZARD ANALYSIS POLICY

BVCI JOB HAZARD ANALYSIS	Job Description:		Date:
	Project: Location:	Contractor: Proj. Mgr. Supt.	Prepared By: Craft Safety Representative: Approved By:

Sequence of Job	Potential Hazards	Recommended Action, Procedure, and/or Equipment

Figure 7

DAILY WORK AREA INSPECTION CHECKLIST

Project No.	Date	Contractor

Project Name	Inspection Conducted By

***C** = Compliant **NC** = Noncompliant **N/A** = Not Applicable

Housekeeping and Sanitation	**C**	**NC**	**N/A**	**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**	**N/A**	**Location/Remarks**
1. For all 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**	**N/A**	**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**	**N/A**	**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	☐	☐	☐	
Scaffolding	**C**	**NC**	**N/A**	**Location/Remarks**
1. Competent person onsite	☐	☐	☐	
2. Scaffold tagged/inspected by competent person	☐	☐	☐	
3. Guardrails/toe boards on scaffold over 6 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**	**N/A**	**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	N/A	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**	**N/A**	**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)	☐	☐	☐	
5. Fall protection for make and model has been reviewed and is in compliance	☐	☐	☐	
Personal Protective Equipment (PPE)	**C**	**NC**	**N/A**	**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**	**N/A**	**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 powder actuated tool operation	☐	☐	☐	
7. Safety clips/pins in place on air hose connections	☐	☐	☐	
8. Proper PPE is being used	☐	☐	☐	
Manual Material Handling	**C**	**NC**	**N/A**	**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**	**N/A**	**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**	**N/A**	**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**	**N/A**	**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	N/A	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 Zone	**C**	**NC**	**N/A**	**Location/Remarks**
1. Signs in good condition/nonconflicting/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. Misc.--adequate buffer/material and equipment properly stored/work area protected/evidence of accidents	☐	☐	☐	
Environmental	**C**	**NC**	**N/A**	**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**	**N/A**	**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 in accordance with 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 two times maximum load	☐	☐	☐	
10. Lifting hardware capable of supporting five 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 feet adequately braced	☐	☐	☐	

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ZA-1 Project
SAFETY, HEALTH, AND ENVIRONMENTAL VIOLATION NOTICE

To: _____ (Contractor)

S/H Violation No. _____

Date _____ Time _____ a.m./p.m.

Site: _____

BVCI Project _____

From: Project Loss Control Office

BVCI File No. _____

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 _____ (Date) _____ (Time) a.m./p.m.

Standard Source:

☐ OSHA ☐ NIOSH ☐ NFPA

☐ NEC ☐ ANSI ☐ Other _____

Violation Notice Submitted: _____ (Date) Signature: _____ (Project Loss Control Representative)

Action to Correct Violation: _____

Violation Corrected: _____ (Date) Signature: _____ (Contractor)

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To _____ S/H Violation No. _____
Contractor

Date _____ Time _____ a.m./p.m.

Site _____ BVCI Project _____

From: Project Loss Control Office BVCI File No. _____

Type of Violation: (See reverse for definitions)

Serious _____ Stop Work--Imminent Danger _____

Nonserious _____ 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 Project Loss Control Representative

Action to Correct Violation: _____

Violation Corrected _____ Signature _____
Date Contractor

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ZA-1 Project
PERSONAL VIOLATION NOTICE

Craft: _____ BVCI No.: _____

_____ Employee I.D. No.: _____
Last First Middle

Contractor: _____ Date: _____ Time: _____ a.m. p.m.

Vehicle: _____ License No.: _____ State: _____

Location: _____

In order to ensure a safe and secure construction site, we ask your cooperation in complying with all security and safety regulations.

Description of Violation: _____

_____

_____

_____

THREE (3) OR MORE CONTACTS SHALL RESULT IN DISCIPLINARY ACTION, WHICH SHALL INCLUDE TERMINATION OF EMPLOYMENT.

Issued By: _____ Incident Report No.: _____

Site: _____

Figure 10


DANGER
DON'T
USE IT
UNSAFE
Safety First
Signed by
Date
DANGER
DO NOT REMOVE THIS TAG
TO DO SO WITHOUT
AUTHORITY WILL MEAN
IMMEDIATE DISCHARGE.
IT IS HERE FOR A PURPOSE
SEE OTHER SIDE

Figure 11

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INJURY/ILLNESS INVESTIGATION

Project No.:	Company:	Project Name and Address:

Work Area: ☐ Outdoors ☐ Indoors ☐ Location on Project: _____

Person Injured: | Sex: ☐ Male ☐ Female

Age:	Incident Date:	Incident Time:

Injured Person's Home Address:

Injured Person's Job Title:	Task Being 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 Incident Description:

Record any Previous Incidents Similar to Above: (Show data, name of injured/involved, and what happened.)

Type of Incident:	Type of Injury/Illness:	
☐ Struck Against	☐ Abrasion	☐ Report Only
☐ Struck By	☐ Burn	
☐ Caught in	☐ Bruise	☐ First Aid = _____
☐ Fall	☐ Cut	
☐ Slip	☐ Dislocation	☐ Medical Treatment = _____
☐ Overexertion	☐ Fracture	
☐ Inhalation	☐ Foreign Body	☐ Lost Workdays (away from work)
☐ Arc Exposure	☐ Irritation	
☐ Vehicle	☐ Poisoning	☐ Fatality
	☐ Sprain	

Name and Address of Physician/Hospital/Clinic:

Incident During:
☐ Normal Work Period ☐ Overtime ☐ Rest Period ☐ Meal Period ☐ Entering
☐ Leaving ☐ Other: _____

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INJURY/ILLNESS INVESTIGATION

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:	**Title:**

Describe where the Supervisor was at Time of Incident:

Was there a Written Procedure or JHA/STA for the Job? ☐ Yes ☐ No	**Was the Procedure or JHA/STA Being Followed?** ☐ Yes ☐ No
Did the Procedure or JHA/STA Include Safety Rules? ☐ Yes ☐ No	**Were the Safety Rules Followed?** ☐ Yes ☐ No

Was the Employee Trained Concerning the Written Procedure or JHA/STA?
☐ Yes ☐ No **If Yes, When?** _____ **By Whom?** _____ **Record:** ☐ Yes ☐ No

Were there any Violations of Applicable OSHA, ANSI, NFPA, or other Pertinent Standards?
☐ Yes ☐ No **If Yes, Describe:** _____

Were there Witnesses?
☐ Yes ☐ No **Name(s):** _____

Witness Statement(s) Obtained and Attached:
☐ Yes ☐ No **If No, Why Not?** _____

BASIC INCIDENT CAUSES

Direct Cause(s):
Contributing Factors:
Root Cause: (If you can still ask why, you have not determined the root cause)

RECOMMENDATIONS TO PREVENT RECURRENCE DEVELOPED BY THE INCIDENT REVIEW TEAM (Review Team Charter for Members)

1.
2.
3.
4.
5.

Prepared By	**Title**	**Date**
Reviewed By	**Title**	**Date**

FIRE EXTINGUISHER INSPECTION LOG

Project Name _____

Project No. _____

No.	Extinguisher Location	Dates											

Figure 13

GFCI Testing Log

Project Name _____

Project No. _____

Location or Box Number	January	February	March	April	May	June	July	August	September	October	November	December

Figure 14

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ZA-1 Project
MONTHLY CRANE INSPECTION REPORT

Site: _____ BVCI File No.: _____
Contractor: _____ Date: _____
Equipment Type: _____ Hours: _____
Make/Model: _____ Ser. No.: _____ Eqpt. 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 15

ZA-1 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 BVCI.

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.

Figure 16

ZA-1 Project
SCAFFOLD TAGS

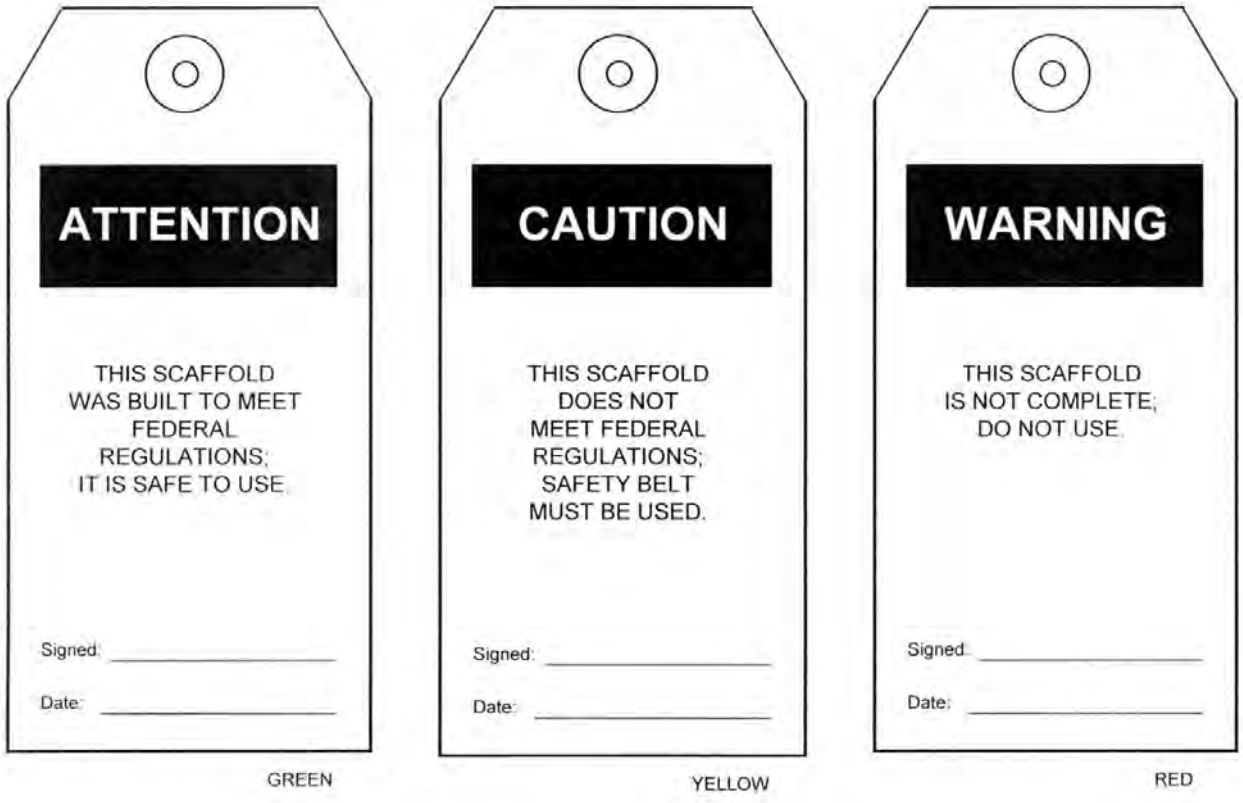

Figure 17

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ZA-1 Project
CONFINED SPACE ENTRY PERMIT

Project: _____ Site: _____

Date/Time of Entry: _____ Permit Expires: _____

Location of Confined Space: _____ Contractor: _____

Tank _____ Pipe _____ Manhole _____ Tunnel _____ Vault _____ Other _____

Work Description/Purpose of Entry: _____

_____

Verification:	Date	Supervisor's Signature
Tagout/Lockout (electrical, agitators, valves)		
Purged, Cleaned, and Drained		
Employees Briefed on Safety Procedures		

Special Requirements:	Mandatory? Yes	No		Mandatory? Yes	No
Notify Plant Control Room			Fire Extinguisher		
BVCI Safety Department Notified	Y	N/A	Lifelines		
Adequate Access	Y	N/A	Harness, Safety Belt		
Lighting Adequate (low voltage)			Respirators		
Attendant Required Outside			Air Supplied Respirator		
Warning Signs Posted at Access	Y	N/A	Protective Clothing		
Ventilation Required			Radio Communication		
Personnel Entry/Exit Log at Access			Signaling Air Horns		
Rescue Equipment at Access Point	Y	N/A	Tripod Emergency Escape Unit		
Daily Monitoring			Employee Training/Indoctrination (include T/I record on back)	Y	N/A

Other Requirements: _____

_____

Atmosphere Check for Oxygen, Combustibles, and Gas/Vapor

Instrument Type: _____

Atmosphere Checked By: _____

	Pre-entry Reading	a.m.	p.m.	Permissible Exposure Level
Oxygen				19.5% to 23.5%
Combustible Gases				10.0% or less
Toxic Gases				CO + 35 ppm, SO_2 2 ppm, H_2S 10 ppm

In case of emergency, call: _____

_____

The following authorizing signatures indicate the above requirements have been met:

Superintendent in Charge of Work: _____ Date: _____

Foreman in Charge of Work: _____ Date: _____

Attendant: _____ Date: _____

Permit Issued By: _____ Date: _____

Authorized Entrants (please print name)	Initial/Time		Authorized Entrants (please print name)	Initial/Time	
	In	Out		In	Out

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CONFINED SPACE ENTRY PERMIT

TRAINING/INDOCTRINATION RECORD

Site: _____ Contractor: _____

Items/Subject Matter Covered/Included: _____

_____

_____

_____

_____

Your Emergency Communication Device is: _____

Your Emergency Communication Device is located: _____

Your Confined Space Entry Supervisor is: _____

Printed Name	Signature	Date

RECOMMENDATIONS FOR SAFE ENTRY: A CHECKLIST

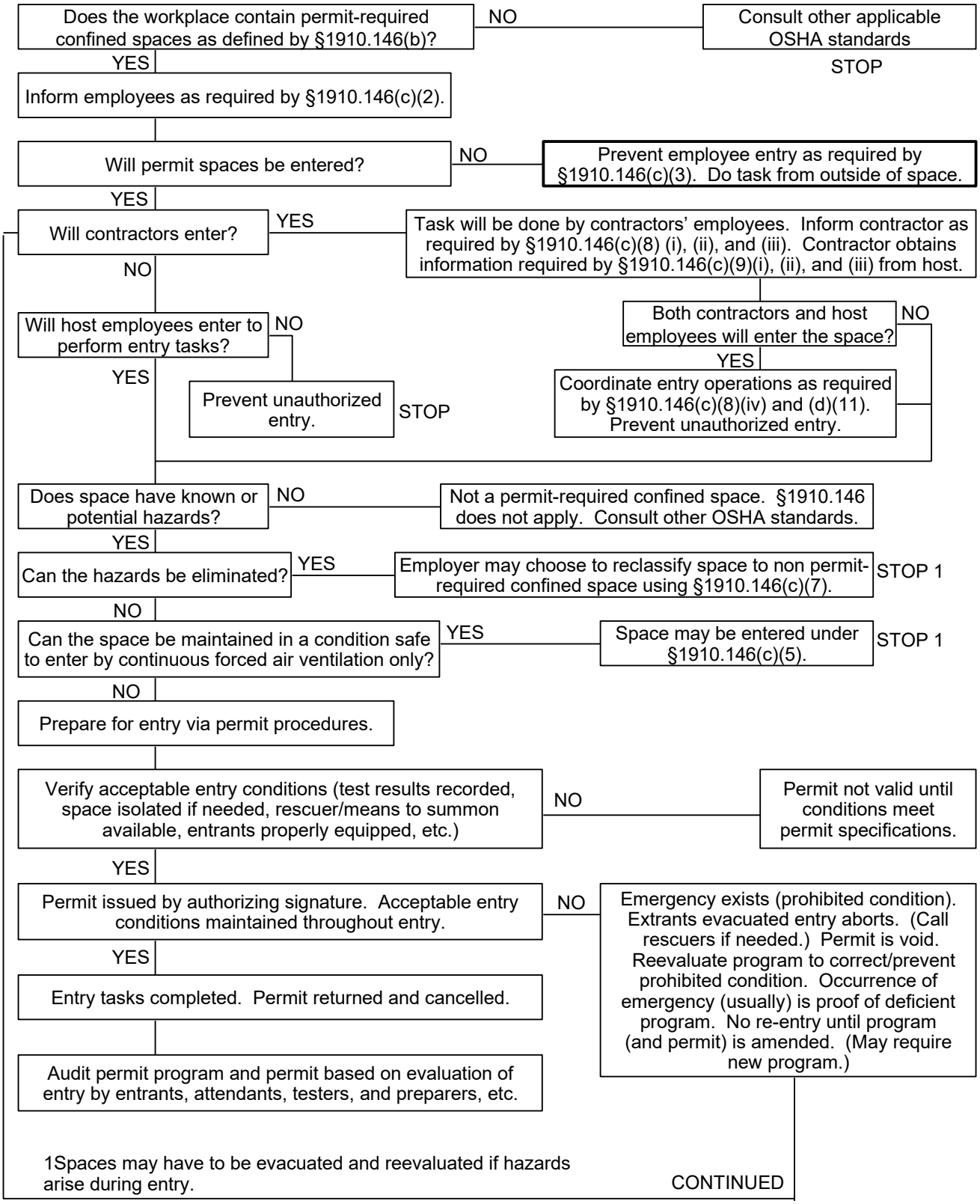
Use the following checklist to evaluate the confined space.

Do not enter a confined space until you have considered every question and have determined the space to be safe.

YES	NO	
☐	☐	Is entry necessary?
		TESTING
☐	☐	Are the instruments used in atmospheric testing properly calibrated?
☐	☐	Was the atmosphere in the confined space tested?
☐	☐	Was the oxygen at least 19.5 percent--not more than 23.5 percent?
☐	☐	Were toxic, flammable, or oxygen-displacing gases/vapors present?
		-Hydrogen Sulfide
		-Carbon Monoxide
		-Methane
		-Carbon Dioxide
		-Other (list) _____
		_____
		MONITORING
☐	☐	Will the atmosphere in the space be monitored while work is going on?
☐	☐	Continuously?
☐	☐	Periodically? (If yes, give interval: _____)
		Remember - Atmospheric changes may occur due to the work procedure or the product stored.
		CLEANING
☐	☐	Has the space been cleaned before entry is made?
☐	☐	Was the space steamed?
☐	☐	If so, was it allowed to cool?
		VENTILATION
☐	☐	Has the space been ventilated before entry?
☐	☐	Will ventilation be continued during entry?
☐	☐	Is the air intake for the ventilation system located in an area that is free of combustible dusts and vapors and toxic substances?
☐	☐	If atmosphere was found unacceptable and then ventilated, was it retested before entry?
		ISOLATION
☐	☐	Has the space been isolated from other systems?
☐	☐	Has electrical equipment been locked out?
☐	☐	Have disconnects been used where possible?
☐	☐	Has mechanical equipment been blocked, chocked, and disengaged where necessary?
☐	☐	Have lines under pressure been blanked and bled?

YES	NO	
		CLOTHING/EQUIPMENT
☐	☐	Is special clothing required (boots, chemical suits, glasses, etc.)?
		(If so, specify: _____)
☐	☐	Is special equipment required (rescue equipment, respirators, communications equipment, etc.)?
		(If so, specify: _____)
☐	☐	Are special tools required (sparkproof)?
		(If so, specify type: _____)
		RESPIRATORY PROTECTION
☐	☐	Are MSHA/NIOSH-approved respirators of the type required available at the worksite?
☐	☐	Is respiratory protection required (air-purifying, supplied air, self-contained breathing apparatus, etc.)?
		(If so, specify: _____)
		TRAINING
☐	☐	Have you been trained in proper use of a respirator?
☐	☐	Have you received first aid/CPR training?
☐	☐	Have you been trained in confined space entry and do you know what to look for?
		STANDBY/RESCUE
☐	☐	Will there be a standby person on the outside in constant visual or auditory communication with the person on the inside?
☐	☐	Will the standby person be able to see and/or hear the person inside at all times?
☐	☐	Has the standby person(s) been trained in rescue procedures?
☐	☐	Will safety lines and harness be required to remove a person?
☐	☐	Are company rescue procedures available and can they be followed in the event of an emergency?
☐	☐	Are you familiar with emergency rescue procedures?
☐	☐	Do you know who to notify and what to do in the event of an emergency?
		PERMIT
		(The permit is an authorization in writing that states that the space has been tested by a qualified person; that the space is safe for entry; what precautions, equipment, etc., are required; and what work is to be done.)
☐	☐	Has a confined space entry permit been issued?
☐	☐	Does the permit include a list of emergency telephone numbers?

PERMIT-REQUIRED CONFINED SPACE DECISION FLOW CHART



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ZA-1 Project
TRENCH AND EXCAVATION NOTICE

Site: _____

Contractor: _____ Date Work Will Start: _____

Competent Person: _____ Date Work Will End: _____

A. Specific Location and Description of Work: _____

_____

B. Sketch of Location Attached? Yes _____ No _____

C. Size of Trench or Excavation: _____ Feet Long x _____ Feet Wide x _____ Feet Deep

D. Lines in Vicinity of Work:

a. Electrical _____ e. Steam _____ i. Other _____ (Specify)
b. Telephone _____ f. Alarm _____
c. Water _____ g. Drain _____
d. Sewer _____ h. Process _____ (Specify)

Contact local authorities? Yes _____ No _____ If yes, who? _____

When? _____ If no, why not? _____

E. Other Known Obstructions:

a. Footings _____ c. Concrete Encasements _____
b. Pilings _____ d. Other _____ (Specify)

F. Precautions to be Taken:

a. De-energize Lines _____ c. Insulate Operator _____
b. Ground Tools _____ d. Hand Excavate _____

G. Precautions to be Taken:

Type A _____ Type C _____
Type B _____ Solid Rock _____

Tests to be used to determine class: _____

_____

H. Protective System:

_____ Sloping _____ Vertical (ft) _____ Horizontal (ft)
_____ Benching _____ Vertical Cut (ft) _____ Horizontal Cut (ft)
_____ Shoring, Type: _____
_____ Shield, Type: _____

I. Drawing Number Used for Reference: _____

THE ABOVE DATA HAS BEEN CHECKED WITH BLUEPRINTS ON FILE. WHEN CLOSE CLEARANCES ARE INDICATED, HAND EXCAVATION MUST BE USED TO DETERMINE THE EXACT LOCATION. EXISTING LINES AND INTERFERENCES IN THE VICINITY OF WORK MUST BE MARKED BY STAKES INDICATING LOCATION AND DEPTH PRIOR TO EXCAVATION.

_____
Contractor Signature

_____
Contract Coordinator

THE ABOVE WORK SHALL NOT COMMENCE UNTIL SIGNED BY BVCI CONTRACT COORDINATOR.
THE SIGNATURE BY THE CONTRACT COORDINATOR IN NO WAY CHANGES THE CONTRACTOR'S RESPONSIBILITY FOR LOCATING ALL UNDERGROUND UTILITIES AND REPAIR OF DAMAGED UTILITIES, AS REQUIRED BY THE CONTRACT. THE CONTRACT COORDINATOR CANNOT BE HELD RESPONSIBLE FOR THE SAFETY REQUIREMENTS FOR THE EXCAVATION.

Figure 19

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ZA-1 Project
WELDING AND CUTTING 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.
_____	_____	_____	Necessary equipment tagged out of service according to the plant tagging procedures.
_____	_____	_____	Fire protection system in service.
_____	_____	_____	Remove all flammable and combustible materials.
_____	_____	_____	Remove or cover flammable and combustible liquid storage cabinets and containers.
_____	_____	_____	Sweep or vacuum away all coal and coal dust. Wet the area down after it is cleaned.
_____	_____	_____	Check area for combustible vapors _____ %.
_____	_____	_____	Purge or inert any piping or vessels prior to welding, cutting, or heating (if they are used to transport or store flammables or combustibles).
_____	_____	_____	Opening in floors or walls shall be 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 complete to ensure there is no fire hazard.
_____	_____	_____	Work area barricaded or roped off if necessary.
_____	_____	_____	Check the communications in the area (phones, radios).
_____	_____	_____	Notify the watch engineer or appropriate operations area supervision.

_____ _____ _____ _____

Signature of Authorizing Person | Date | Signature of Person Requesting Permit | Date

Figure 20

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? (75 percent of crane capacity, 90 percent of load chart, 20 tons, or multiple crane) …. Yes ☐ No ☐
    a. 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

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 onsite 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.).

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Concrete and Anchor Bolt Release Form

Footings, Piers, Walls, and Anchor Bolts

BVCI Project Name: _____

BVCI Project No.: _____

Released To: _____ BVCI File No.: _____

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.)

BVCI Site Quality Manager: _____ Date: _____

BVCI Project Field Manager: _____ Date: _____

Distribution:
Project Field Manager
Loss Control Manager
Contractor or BVCI Structural Crew
File

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Concrete and Anchor Bolt Release Form

Footings, Piers, Walls, and Anchor Bolts

BVCI Project Name: (1) _____

BVCI Project No.: (2) _____

Released To: (3) _____ BVCI File No.: (4) _____

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? (13) Yes ☐ No ☐
(If YES, attach copy of standard engineered repair or NCR.)

BVCI Site Quality Manager: (14) _____ Date: (15) _____

BVCI Project Field Manager: (16) _____ Date: (17) _____

Distribution: (18)
Project Field Manager
Loss Control Manager
Contractor or BVCI Structural Crew
File

This form is to be completed and issued to the steel erection contractor, or the BVCI 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 BVCI project name (e.g., **ZA-1** Project).

2. Type in the BVCI project number (e.g., 172939).

3. Enter name of Contractor.

4. Project Field Manager to assign BVCI 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 date 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. BVCI 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. BVCI 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. BVCI 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. BVCI 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 contractor or BVCI structural crew, project files, Project Field Manager, and the Site Loss Control Manager.)

Perimeter Guardrail Turnover Form

1. Inspection of Guardrail System

A. Attendees:

Name	Organization

B. Date: _____

2. List of Deficiencies (specific area of inspection; i.e., unit, building, etc.)

Deficiency (location and brief description)	Responsible Party	Date to be Completed	Signoff (both parties)

Figure 23

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LOSS CONTROL DEPARTMENT
OCCUPATIONAL SAFETY AND HEALTH REGULATIONS

INTRODUCTION

The following Occupational Safety and Health Rules have been adopted for the protection of all persons involved with the construction site. These rules apply to management, contractor personnel, and visitors while on the Jobsite. You are responsible for knowing the safety rules that are in force and adhering to them at all times. You are also responsible for helping your fellow employees abide by the rules and work safely. These rules are general in nature and are not to be considered all-inclusive, nor do they relieve any contractor or employees from the requirements of the Occupational Safety and Health Act of 1970 as amended.

GENERAL SAFETY RULES

Housekeeping:

(1) Leads, hoses, and extension cords shall be hung up (approximately 7 feet) with a nonconductive material, off all floors, stairways, and walkways. 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 such liquid spills shall be cleaned up at the time of spill and are not to be left unattended.

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

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

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

Personal Protective Equipment:

(1) Eye Protection:
   a. ANSI approved safety glasses 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 BVCI Project Loss Control Manager.
   b. Safety goggles shall be worn when possible eye hazards are present.
   c. 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 gas, vapor, or particulate contaminants in the atmosphere.

(4) Hard hats shall be worn at all times in the construction area. All areas on this Jobsite are hard hat areas.

(5) Work Boots:
   a. In the construction area, good leather work boots with a hard sole and 6 inch tops that support the ankle are required.
   b. ANSI approved Safety-toe Steel-toe work boots are required.
   c. Tennis shoes shall not be allowed on the Jobsite.

(6) Shirts and Pants:
   a. Shirts covering the full trunk and shoulders are required. Tank tops or midriff shirts are not allowed.
   b. Cutoff jeans or shorts shall not be worn on the Jobsite.

(7) Seat belts shall be worn by all personnel riding in vehicles, as well as heavy equipment operators and forklift operators.

(8) No riders other than the operator shall be allowed on any piece of mobile equipment.

(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) Gloves are required anytime there is an exposure to chemicals, sharp objects, or material handling, or when gloves will help prevent hand injuries. When handling chemicals, use the appropriate gloves for the chemical, as required by the MSDS. Gloves are not to be worn where there is danger of them being caught in moving machinery or rotating parts.

Fall Protection:

(1) Fall protection is required 100 percent of the time when employees are exposed to a fall in excess of 6 feet 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, lanyards with a deceleration device, 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) Employees shall rig fall arrest equipment so that they can neither free fall more than 6 feet nor contact any lower object. Anchorage points for fall arrest equipment shall be capable of supporting a shock load and 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.

Fall Protection (Cont.):

(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.

(6) Prior to 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.

(7) All fall arrest equipment subjected to impacts caused by a free fall or by testing shall be removed from service.

(8) Employees should store all fall arrest equipment in a cool, dry place not subjected to direct sunlight.

(9) Employees shall not use fall arrest equipment until they have been properly trained in its use.

(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.

(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.

(15) When operating a scissor lift work platform, the lift shall have guardrails on all open sides and the door access chains or rails in place.

(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.

(18) Employees working on wall forms or rebar shall wear a body harness lanyard and/or 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 toe-board. The top rail shall have a vertical height of 42 inches, the midrail shall be at 21 inches, and the toeboard 4 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 of 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 shall be stretched taut to allow no more than a 3 inch deflection.

(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) Contractors shall comply with 29 CFR 1926.500-503 Sub-Part 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) Cylinders shall have their contents properly identified.

(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.

(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.

Compressed Gases (Cont.):

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

(15) Acetylene--Acetylene cylinders shall be properly secured and always used, transported, or stored in a vertical position. Cylinders shall be protected from sparks, flames, and contact with energized electrical equipment:
   a. An acetylene cylinder shall not be opened more than one-and-one-half turns of the spindle and preferably no more than three-fourths of a turn.
   b. Employees shall not use acetylene in a free state at pressures higher than 15 psi.
   c. 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 or on the construction site, employees shall obtain a Welding and Cutting Permit 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 engaged in welding or cutting operations.

(6) A fire watch shall be maintained wherever welding or cutting is performed in locations where combustible materials present a fire hazard. A fire check shall be made of the area ½ 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. 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 eyes, face, and body during welding and cutting, the operator shall wear an approved helmet or goggles, proper protective gloves, and clothing. Helpers or attendants shall wear proper eye protection. Other employees shall not observe welding operations unless they use approved eye protection.

(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 prior to the application of heat.

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

Gas Welding and Cutting:

(1) Only approved gas welding or cutting equipment shall be used.

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

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

(4) 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.

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

Electric Welding:

(1) Only approved electric welding equipment shall be used.

(2) The electric welding machine shall be properly grounded prior to use.

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

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

Electric Welding (Cont.):

(5) 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.
(6) When the welder must leave his work or stop work for any appreciable length of time, or when the welding machine is to be moved, the power supply switch to the equipment shall be opened.
(7) Grounding shall be provided to the piece being welded.

Rigging Equipment:

(1) All rigging equipment shall be of sufficient strength, proper type, and safe for its intended use.
(2) Rigging equipment shall not be loaded beyond its rated capacity.
(3) Prior to 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 devices.
(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 nonapproved 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 eyebolts are used, care shall be taken to ensure 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 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 from the contractor and submitted to BVCI. 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, braced, or shored to prevent cave-ins.
(3) All excavations 4 feet or deeper shall have a ladder for access into the excavation with no more than 25 feet of travel in any direction.
(4) All excavated and available materials 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 entering an excavation that may be considered a hazardous environment, the proper personal protective equipment must be worn.
(7) Full compliance with 29 CFR 1926.650-652 is required.

Safe Supports and Scaffolds:

(1) No employee, or 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 it first being determined that such support is adequately strong and properly secured in place.
(2) Employees shall check all scaffolding before use to ensure 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 there is present a standard guardrail, with midrail and toeboard, to provide adequate employee protection.
(4) Scaffold planks shall be secured in place and 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 of 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.

Safe Supports and Scaffolds (Cont.):

(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 24 feet.

(13) Employees shall not use a scaffold unless it is properly tagged according to the Project Scaffold Tagging Procedure.

Ladders--General:

(1) Wooden ladder 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) Ladders and scaffolds shall be sufficiently strong for their intended use.

(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.)

(5) Ladders shall not be placed in front of doors opening toward the ladder unless the door is open, locked, or guarded.

(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 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 one-fourth of the ladder length between supports.

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

(4) When working 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 when 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 over 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 power equipment shall be used. Back belts or back braces shall be used as required.

(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.

a. 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 performing a task that requires repetitive lifting, the load should be positioned to limit bending and twisting. The use of lift tables, pallets, and mechanical devices should be considered.

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

(8) When gripping, grasping, or lifting an object such as a pipe or board, the 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.)

Hand Tools (Cont):

(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.
(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) All cutting tools such as saws, wood chisels, drawknives, or axes shall be kept in suitable guards or in special compartments.
(16) Tools shall not be left lying around where they may cause a person to stumble or trip.
(17) When working on or above open grating, a canvas or other suitable covering shall be used to cover the grating to prevent tools or parts from dropping to a lower level where others are present, or the danger area shall be barricaded or guarded.
(18) The insulation on hand tools shall not be depended upon to protect users from shock.

Portable Electric 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 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.
(3) Powered tools shall be used only within their capability and shall be operated in accordance with the instructions of the manufacturer.
(4) All tools shall be kept in good repair and shall be disconnected from the power source while repairs are being made.
(5) Electrical tools shall not be used where there is a hazard of flammable vapors, gases, or dusts.
(6) All power tools and cord sets shall be protected by ground fault circuit interrupters.

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 cleaning purposes except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.
(6) Compressed air shall not be used to blow dust or dirt from clothing.
(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 making adjustments or changing air tools, unless 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 breaking the connection.
(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.

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.

Cranes, Derricks, Hoisting Equipment (Cont):

(2) No person shall be permitted to ride the hook, sling, or load of any hoisting equipment.
(3) Load limits as specified by the manufacturer shall not be exceeded under any circumstances.
(4) Operating and maintenance procedures as specified by the manufacturer shall be followed.
(5) Before a lift is attempted, the lifting mechanism shall be level, 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.
(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 unless the nature of his work requires it.
(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 in close proximity 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.
(16) All spreader bars shall be tagged 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 lift plan shall be required prior to all 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 and/or 90 percent of the crane's load chart.

Flammable and Combustible Liquids:

(1) "Danger No Smoking" signs shall be posted around all flammable and combustible liquid storage areas.
(2) All aboveground tanks shall have a containment around them of adequate size to contain spills.
(3) Tanks shall be vented with a pipe not less than 1-1/4 inch inside diameter and shall be 12 feet high from the adjacent ground level.
(4) Tanks shall be kept 20 feet from buildings.
(5) At least one 20 pound Class B fire extinguisher shall be kept between 25 feet to 75 feet from tanks.
(6) All tanks shall be properly grounded.
(7) All tanks shall be labeled with the contents and contractor's name.

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, a Confined Space Entry Permit shall be obtained 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) Prior to entering a confined space, all levels of the confined space shall be tested 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, 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.

Confined or Enclosed Spaces (Cont):

(13) Contractors are responsible for providing proper air monitoring equipment.

Barrier Tape Identification System:

(1) In order to uniformly identify particular hazards, a barrier tape identification system has been developed for use by all contractors working on the project. It has been developed so that any employee working on the Jobsite, regardless of employer, can recognize and avoid a hazard when properly marked.

(2) The following barrier tape identification system shall be used:
   a. General--Red tape (may have black in it). "Do not cross-Imminent Danger."
   b. Electrical--Yellow tape (may have black in it). Open wiring, switchgear, etc. "Do not cross."
   c. Radiation--Yellow and magenta (purple) tape. Possible radiation hazard, x-ray, etc. "Do not cross."

(3) The contractor erecting the barrier tape shall hang a tag on the tape that indicates the hazard, name of contractor, and name of person erecting the tape.

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

Heaters:

(1) UL approved salamanders, Redi heaters, and space heaters are the only approved heaters on the Jobsite.
   a. Heaters shall be used in accordance with OSHA Standard 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:
   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 near miss.

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 1926.251.

(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 1926.760(a)(1).

(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.

Reporting Accidents and Injuries:

All accidents and injuries are to be reported to the contractor and BVCI on the same day they happen.

Penalties:

(1) Penalties for willful or repeated violation of Jobsite Safety and Health Rules by an individual shall include termination of employment from the project.

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ZA-1 Project

OPERATOR'S DAILY CHECKLIST
Check Before Start of Each Shift

Check one: ☐ Gas, LPG, or diesel truck ☐ Electric truck Date: _____

Truck number: _____ Operator: _____ Supervisor's OK: _____

Hour meter reading: _____ Start of day: _____ End of day: _____ Hours for day: ____

Check boxes accordingly: ☒ OK ☒ Not OK (needs attention or repair)

OK	Not OK	Visual Checks	OK	Not OK	Operational Checks
		Tire condition			Horn
		Head and tail lights			Steering
		Warning lights			Service brakes
		Hour meter			Parking brakes
		Other gauges and instruments			Hydraulic controls
		Obvious damage and leaks			Seat brake
		Engine oil level			Battery load test **NOTE**: Watch battery indicator while holding tilt lever on full back tilt. If needle falls to red area, battery doesn't have sufficient charge to operate truck properly.
		Radiator water level			
		Fuel level			
		Battery plug connection **NOTE**: Be sure the battery plug connection is tight.			
		Battery discharge indicator **NOTE**: Key on needle should indicate in green area.			

Remarks (explain all items needing attention or repair):

Figure 25

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.

Figure 26

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 Dist _____ Phone Booth _____ Internal _____

Voice Characteristics

_____ loud _____ soft
_____ high pitched _____ deep
_____ raspy _____ pleasant
_____ intoxicated _____ other (explain)

Language

_____ excellent _____ good
_____ fair _____ poor
_____ foul _____ other (explain)
_____ use of certain words or phrases

Speech

_____ fast _____ slow
_____ distinct _____ distorted
_____ stutter _____ nasal
_____ slurred _____ other (explain)

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 Loss Control Manager.
2. Write out message in its entirety as received from the information.

Figure 27

ZA-1 Project
LOSS CONTROL DEPARTMENT
SECURITY REGULATIONS

Introduction

Welcome to the project. BVCI 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 BVCI. This identification badge shall be worn on the upper part of the body in plain view. This identification badge shall be surrendered to any BVCI 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 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 BVCI 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 which 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 towards the commission of any criminal offenses.
(6) Possesses firearms or other deadly weapons on his person or within a vehicle under his 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 which is not his assigned work area.
(9) Commits any act which 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 which 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) Narcotics or nonprescribed drugs.
(5) Pets.
(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.

All site personnel are expected to comply with requests of Security Officers. Failure to do so may result in discharge.

Figure 28

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WORK RULES RECEIPT

I, _____, certify that Construction Management has issued me a copy of the **ZA-1** 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 **ZA-1** Project.

The undersigned will make every effort to become familiar with said regulations.

Signed _____ Employee SSN # _____

Contractor _____

Craft _____ Date _____

Figure 29

ZA-1 Project

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 BVCI. This identification badge shall be surrendered to any Project Security Officer or BVCI 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

Figure 30

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AFTER HOURS ACCESS REQUEST

Any Contractor having personnel onsite after normal working hours must submit to the BVCI Loss Control Department 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 BVCI Loss Control Department 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 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.	
			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

Figure 31

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ZA-1 Project

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 BVCI approval will be considered.

I, the undersigned, knowingly and voluntarily consent to a search of the above mentioned vehicle by BVCI Loss Control 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: _____

BVCI
(ONLY)

Pass Approved By: _____ Date: _____

Pass Denied By: _____ Date: _____

Figure 32

Click here to type date

Black & Veatch Construction, Inc.
Click here to type address

Subject: Click here to type Contractor's name
Click here to type project name
Pre-employment Drug and Alcohol Test

Attention: Click here to type Safety Manager's name

Dear Click here to type BVCI Safety Manager's name:

The following employee(s) has (have) undergone a pre-employment drug and alcohol test and has (have) been found in compliance/noncompliance (choose one) with the Drug Free Workplace policy:

Click here to type name(s)

This list will be updated as each transferred or newly hired employee is drug tested.

Sincerely,

CLICK HERE TO TYPE CONTRACTOR COMPANY NAME

Click here to type name of signer
Click here to type title of signer

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ZA-1 Project
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 Request Form, and the Vehicle Pass Request Form.

Three signatures are required for comparison purposes. This card must be submitted to BVCI. Without prior approval, none of the above forms will be accepted and the respective requests shall be denied:

1) Printed name of person to be authorized.
2) Name of Contractor for whom the authorized representative works.
3) Authorized representative's badge number.
4) Work telephone number.
5) Date card completed.
6) Home telephone number.
7) Authorized representative's signatures (three times).

ZA-1 Project

Name: _____ Contractor: _____

Badge No. _____

Work Phone: _____ Date: _____
Month/Day/Year

Home Phone: _____

Signatures: x _____

x _____

x _____
(three signatures required for comparison purposes)

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ZA-1 Project
EQUIPMENT AND MATERIAL REMOVAL PERMIT

Name of Person Receiving Property (Print or Type)

Last First Middle

Date: _____

Employee Badge No. _____

Employer: _____

No.	Item(s) Removed (Show name of item, make or brand name, equipment serial or identification number.) Include special markings. Quantity and Description of Property	Serial or I.D. 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: (Sign) _____ Recipient Approved By: _____ Recipient's Immediate Supervisor

Authorized Signature for Contractor: _____ Date: _____ 20 _____

Time Out Gate: _____ a.m. p.m. Date: _____ 20 _____ By: _____ Security Officer Photo: _____

Returned: _____ 20 _____ Checked in By: _____ Security Officer _____ Computer Entry

Figure 35

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ENVIRONMENTAL INCIDENT REPORT

Site _____ Report No. _____

Contractor _____ BVCI 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 (BVCI) Date

Figure 36

BLACK & VEATCH Building a world of difference.	**WATER DISCHARGE NOTIFICATION**

Site Name	
Contractor	
Requesting Supervisor	
Date	
Time	

☐ **Planned Discharge** ☐ **Unplanned Discharge**

Date/Time of Discharge			
Types	☐ **Stormwater** ☐ **Wastewater**	☐ **Non-Stormwater** ☐ **Dewatering**	☐ **Industrial Wastewater**
Source of Water Discharge			
Location of Discharge			
Estimated Volume			
NPDES Permit No.			
Discharge Contaminated?	☐ **Yes**	☐ **No**	
Comments			
Discharge Method			
Discharge Destination			
Dewatering Method			
Location of Infiltration Trenches			
Location of Turbidity Barricades			

Figure 37

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NEAR-MISS/PROPERTY DAMAGE REPORT

Project No.:	Company:	Project Name and Address:

Name of Person Completing Form (Last, First, Middle Initial):	Title of Person Completing Form:
Contact Phone Number(s):	Witness (Name and Phone No.):

Date of Incident:	Time of Incident: AM / PM	Near-Miss Location: (building name, room no., stairwell). If outside of building, give location in reference to nearest building:

Incident Description: (Describe in full the protocol/procedures being followed including all substances, equipment, and machinery being used that was related to the incident. Use additional sheets if necessary.)

Personal Protective Equipment (PPE) Used (if applicable):

Severity - Check the level of severity which 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 such factors as physical injuries, damage to equipment/property, and environmental impacts.)

☐ **HIGH** ☐ **MEDIUM** ☐ **LOW**

Probability - Check the level of probability which you feel that a person or property may be exposed to in a similar situation and 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 such criteria as complexity of the system, latent and human factors, etc.)

☐ **HIGH** ☐ **MEDIUM** ☐ **LOW**

Corrective Actions: (What should be done or has been done to prevent recurrence of this incident? e.g., employee training, change of procedure, purchasing equipment, etc.)

Miscellaneous Information: (Provide any other information or recommendations which you feel are pertinent to this incident.)

Figure 38

CRITICAL LIFT PLAN

Project Name: _____ Project #: _____

Location: _____ Date: _____

Company: _____

Submitted By: _____

5. Crane Manufacturer:	6. Model Number:	7. Crane Inspection Date:	8. Weather Conditions:
9. Description Of Load:	10. Boom Length:	11. Boom Angle: PICK: SET:	12. Will Jib Be Used? ☐ YES ☐ NO
13. Jib Length:	14. Offset/Type To #	15. Maximum Operating Radius:	16. Degree Of Swing:
17. Crane Manufacturers Rated Capacity:			

Classification (check all that apply)

- Load is over 75% of the crane's rated capacity for current configuration ☐
- More than 20 tons ☐
- Lift is over operating systems (charged electrical equipment, pipelines, etc.) ☐
- Lift uses two (2) or more cranes ☐
- Lift will be within minimum approach distance of energized overhead electrical lines ☐

SIGNATURES	
_____	Craft Supervisor: _____
Crane Operator: _____	Site Safety Manager: _____
Rigging Supervisor: _____	Project Construction Manager: _____

PRE-LIFT MEETING ATTENDEES SIGNATURES	
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

A. WEIGHT			B. JIB		
1. Weight of Equipment		Lbs.	☐ Erected ☐ Stowed		
2. Weight of Headache Ball		Lbs.	1. Length of Jib		Ft.
3. Weight of Load Block		Lbs.	2. Angle of Jib		Deg.
4. Weight of Lifting Bar		Lbs.	3. Rated Capacity of Jib (From Chart)		Lbs.
5. Weight of Slings and Shackles		Lbs.	**C. SIZING OF SLINGS/SHACKLES**		
6. Weight of Jib		Lbs.	1. Sling Selection:		
7. Weight of Cable (Load Fall)		Lbs.	a. Type of Arrangement		
8. Allowance for Unaccounted Material in Equipment (10% of Equip. Weight)		Lbs.	b. Number of Slings in Hookup		
			c. Certification Attached or Number		
9. No. of People Lifted x 250 lbs.		Lbs.	d. Sling Length		Ft.
10. Other		Lbs.	e. Rated Capacity of Slings		Lbs.
TOTAL WEIGHT		Lbs.	2. Shackle Selection:		
			a. Capacity (Tons)		
Source of Load Weight:			b. Shackles Attached to Load By:		
(Name Plate, Drawings, Calculated)			c. Number of Shackles		
Weight Verified By:			d. Certification Attached or Number		

D. CRANE			E. CRANE PLACEMENT		
1. Type of Crane			1. Smooth Solid Foundation in Area?	☐ Yes	☐ No
2. Crane Capacity		Lbs.	If No Explain:		
3. Lifting Arrangement					
a. Max. Distance Center Load to Center Pin		Ft.			
b. Length of Boom		Ft.	2. Electrical Hazards in Area?	☐ Yes	☐ No
c. Angle of Boom at Pickup		Deg.	If Yes Explain:		
d. Angle of Boom at Set		Deg.			
4. Rated capacity of crane under most severe lifting conditions:					
a. Over Rear		Lbs.	3. Obstructions/Obstacles to Lift/Swing?	☐ Yes	☐ No
b. Over Front		Lbs.	If Yes Explain:		
c. Over Side		Lbs.			
5. Rated Capacity of Crane for Lift		Lbs.	4. Underground Piping/Cables?	☐ Yes	☐ No
6. Max. Load on Crane		Lbs.	If Yes Explain:		
7. Lift is % of Crane's Rated Capacity					

PRE-LIFT CHECK LIST					
1. Matting Acceptable?	☐ Yes	☐ No	7. Tag Line Used?	☐ Yes	☐ No
2. Outriggers Fully Extended?	☐ Yes	☐ No	8. Experienced Operator?	☐ Yes	☐ No

Figure 39

3. Crane in Good Condition?	☐ Yes	☐ No	9. Experienced Flagman Designated?	☐ Yes	☐ No
4. Adequate Awing Room?	☐ Yes	☐ No	10. Experienced Rigger?	☐ Yes	☐ No
5. Head Room Checked?	☐ Yes	☐ No	11. Load Chart in Crane?	☐ Yes	☐ No
6. Maximum Counterweight Used?	☐ Yes	☐ No	12. Wind Conditions?		

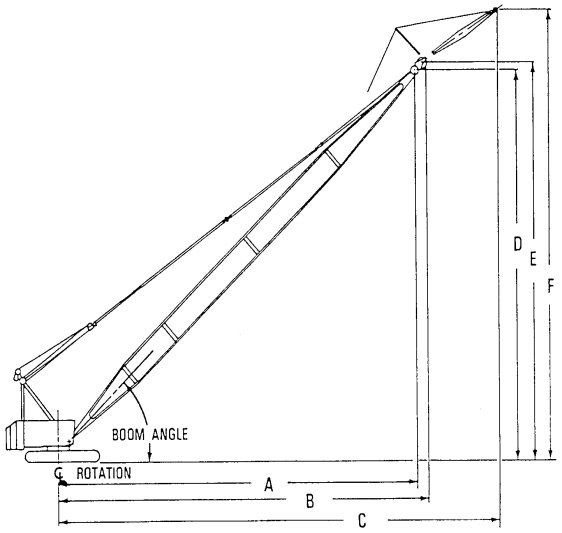
13. Crane Inspected By:	Date:
14. Functional Test of Crane By :	Date:

DIAGRAM CRANE AND LOAD PLACEMENT (Draw in space below, or attach copy)	DIAGRAM RIGGING CONFIGURATION (Draw in space below, or attach copy)

SPECIAL INSTRUCTIONS OR RESTRICTIONS FOR CRANE, RIGGING, LIFT, ETC.:

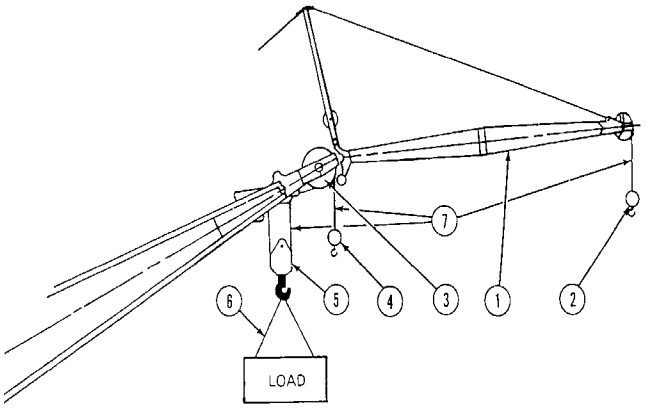
- **MULTIPLE CRANE LIFTS REQUIRE A SEPARATE LIFT PLAN FOR EACH CRANE.**
- **ANY CHANGES IN THE CONFIGURATION OF THE CRANE, PLACEMENT, RIGGING, LIFTING SCHEME, ETC. OR CHANGES IN ANY CALCULATIONS REQUIRE THAT A NEW LIFT PLAN BE DEVELOPED**

CAPACITY CHART GUIDELINE



A - Operating Radius - Main Load Line (Lower Boom Point)	Ft.
B - Operating Radius - Whip Line (Upper Boom Point)	Ft.
C - Operating Radius (Jib Point)	Ft.
D - Boom Point Elevation - Main Load Line (Lower Boom Point)	Ft.
E - Boom Point Elevation - Whip Line (Upper Boom Point)	Ft.
F - Jib Point Elevation - Jib Line (Jib Point)	Ft.

GUIDE FOR DETERMINING TOTAL ERECTION LOAD



1. Jib (see "Deduct From Capacities" on capacity chart)	Lbs.
2. Weight Ball and Hook (jib point)	Lbs.
3. Upper Boom Point (from capacity chart if noted)	Lbs.
4. Weight Ball and Hook (upper boom point)	Lbs.
5. Load Block	Lbs.
6. Total Weight Wire Rope Beneath Lower, Upper and Jib Point (see "Load Line Specifications" for weight of wire rope per ft.)	Lbs.
7. Slings	Lbs.
8. Shackles	Lbs.
9. Spreader Bar(s)	Lbs.
10. Weight of Other Miscellaneous Rigging	Lbs.

Figure 39

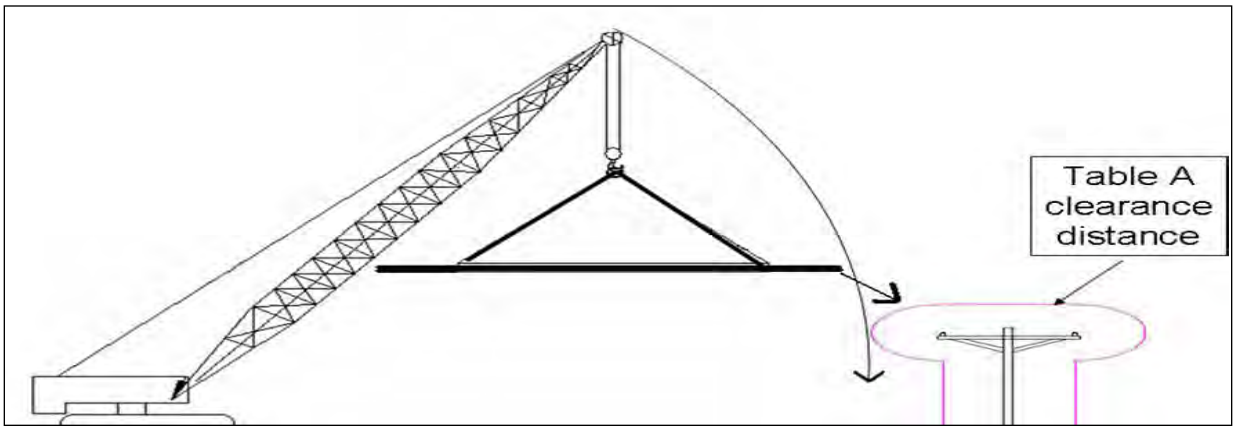


Figure 39

Appendix A

ZA-1 Project
Safety Lockout/Tagout Procedure
(Hazardous Energy Control)

Appendix A
ZA-1 Project
Safety Lockout/Tagout Procedure
(Hazardous Energy Control)

1.0 Purpose

The purpose of the Safety Lockout/Tagout (LOTO) Procedure is to establish the method by which lockout/tagout 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 operate or use a machine or equipment on which construction, modification, testing, startup, servicing, or maintenance is being performed under a Do Not Operate (DNO) Isolation, 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).

- Authorized Tagging Authority--An Authorized Tagging Authority is a person, usually at supervisor level or above, who is authorized to request LOTO tagging and implement an isolation as directed by the applicable Tagging Manager. This person must be trained and demonstrate understanding and competence in the execution of the LOTO and 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 may be operated or energized as necessary for the testing of the system or components (Attachment LOTO-A1).

- Caution - System Under Operations (SUO) Tags (orange with black lettering)--This tag is used to identify major equipment and systems that

may be operated or energized as necessary to support the project operational requirements (Attachment LOTO-A2).

- Crew--A group of workers, under the direction of a supervisor, who perform specific work (e.g., electrician, pipefitter, millwright, etc.).

- Danger - Do Not Operate (DNO) Tags (white with red and black lettering)--This tag is used to identify an isolation point and control the position or status of any 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 a device in-operable (Attachment LOTO-A3).

- Isolation Logs--These log sheets are specific to each electrical or mechanical isolating task and are used to track LOTO status on that task. Authorized Tagging Authorities are required to sign on and off the log as LOTOs are implemented and released (Attachment LOTO-A4 and Attachment LOTO-A5).

- 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 circuit breaker.

  – A disconnect switch.

  – An isolation valve. Note: Check Valves shall not to be used as an isolation point however a Stop Check Valve is acceptable, provided the Stop is engaged as part of the Isolation and verified as part of the LOTO.

  – A blank flange, slip blind, or any similar device used to physically block or isolate energy.

  – Physical separation (e.g., lifted leads, misaligned pipes, removed spool pieces).

- DNO Isolation Request--A form used to request a DNO Isolation.

- Holder--Any Authorized Tagging Authority who is signed onto the Isolation Log. By becoming a Holder, the Authorized Tagging Authority ensures that the LOTO is maintained.

- Job Hazard Analysis (JHA)--A 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 (Attachment LOTO-A6).

- 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 that is capable of being locked into position.

  – Valve Locking Devices--Chains or specialized locking devices that prevent operation of valves by manual means.

- 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).

- LOTO Coordinator--An Authorized Tagging Authority delegated by the Tagging Manager to perform all Tagging Manager tasks except for determining if the current plant conditions are acceptable to allow the safe execution of the planned work.

- Permit to Work (PTW)--A work authorization that is required to perform work on equipment, systems, or subsystems that have been turned over to Startup or Operations (Attachment LOTO-A7). The Tagging Manager has the authority to waive the need for a work permit for specific instances where the activity does not need a LOTO to render the equipment safe to work on. Examples of this type of work would be packing adjustments, hanging labels on valves or panels, cabinets etc., touch up painting on cold piping systems, installing insulation on piping.

- Personal Lock--A lock that is supplied by an individual employee that may be used to supplement the protection provided by the Safety Lockout/Tagout Procedure.

- Safety Tagging Displays--Displays located throughout the plant which identify tags and communicate general information regarding LOTO procedures.

- Safety Task Assignment (STA)--A form completed by the supervisor before the start of a work operation. The form considers LOTO hazards, work procedures, emergency procedures, equipment, material, time, and training necessary to complete the work operation and includes employee input (Attachment LOTO-A8).

- Tagging Manager--A manager level employee who has been assigned the responsibility for implementing the project LOTO and PTW programs. The Tagging Manager is the person who approves PTWs, DNO Isolations, the hanging of SUT and SUO tags, and who has been trained in the applicable OSHA standards.

- Note: The Tagging Manager may delegate all tasks of the LOTO procedure except for determining if the current plant conditions are acceptable to allow the safe execution of the planned work to the LOTO Coordinator.

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. • DNOs are used for LOTO.
Commissioning	Commissioning Manager	LOTO Coordinator Discipline Superintendent General Foremen Discipline Foremen Commissioning Engineer Commissioning Technician	• Commissioning has accepted items on a system basis. • System Under Test tags indicate items are in commissioning phase. • DNOs are used for LOTO.
Operations	Owner's Operations Shift Supervisors	LOTO Coordinator Discipline Superintendent General Foremen Discipline Foremen Commissioning Engineer Commissioning Technician Client Personnel	• Operations have accepted control of system. • System Under Operation tags indicate items are in Operation's control. • ZA-1'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 Safety 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 safety tagging 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 safety tagging 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: Isolation Request, PTW, Isolation Logs.
- Proper methods and sequencing for placing and removing LOTOs.
- Proper identification of the need for additional permits (confined space entry, hot work permit, job hazard analysis), and establishment of these programs in accordance with the project safety manual.
- Closing out a 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: Isolation Request, PTW, Isolation Logs.
- Proper methods and sequencing for placing and removing LOTOs.
- Closing out a 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.
- Proper identification of the need for additional permits (confined space entry, hot work permit, job hazard analysis) and establishment of these programs in accordance with the project safety manual.

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 safety tagging procedure.
- When there is a change in job assignment.
- When inadequacies in an employee's knowledge are identified.
- When deviations in the use of the safety tagging procedure are identified.
- When systems are turned over to ZA-1 and ZA-1's Safety Tagging Procedure is in place.

3.3 Training Documentation

The Site Safety Manager, or designated alternate, shall maintain a record of all Tagging Manager, Authorized Tagging Authority, and Affected Employee training efforts. A list of Authorized Tagging Authorities will be kept and made available to the Tagging Managers for the purposes of verifying Authorized Tagging Authorities. A copy of all of the tests taken by employees will be maintained in the Site Safety Manager's Training files. Employees shall receive hard hat stickers to indicate their level of training (Attachment LOTO-A9).

4.0 Compliance

Failure to comply with the tagging procedure rules shall be considered just cause for disciplinary action against the responsible individual up to and including removal 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 and or locks/locking devices from a system or piece of equipment without proper authorization.

5.0 Procedure

5.1 Preparation

- Order and obtain LOTO supplies from Construction Equipment & Fleet Services Center (Attachment LOTO-A10). It is also permissible to forward LOTO supplies that are surplus from project to project to most effectively maintain LOTO Supply inventory.
- Prepare LOTO informational boards for display in prominent areas on the project site. The display should include the purpose of LOTO, sample tags and a brief description of their uses, and consequences for failure to comply with procedures.
- Prepare Isolation Logs. A log sheet should be developed for each LOTO being issued. Log sheets should be placed in three ring binders and organized in a logical manner to permit easy access.

- Complete the LOTO contact sheet for all Authorized Tagging Authorities (Attachment LOTO-A11).

5.2 General Rules

1. The Project Field Manager and/or the Tagging Manager shall ensure implementation of the Safety Lockout/Tagout Procedure.

2. All LOTOs shall be recorded on an Isolation Log sheet 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 Tagging Manager 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 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 work activities are required on a system after that system has been turned over to Commissioning, whether the work is to be performed by Construction or Commissioning, a PTW (Attachment LOTO-A7) shall be required to perform the work (refer to Section 8.0, Permit to Work). The Tagging Manager has the authority to waive the need for a work permit for specific instances where the activity does not need a LOTO to render the equipment safe to work on. Examples of this type of work would be packing adjustments, hanging labels on valves or panels, cabinets etc., touch up painting on cold piping systems, installing insulation on piping.

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 JHA shall be completed before the work is performed (Attachment LOTO A-A6).

    b. Temporary insulating and shielding shall be done unless the application of the shielding presents a greater hazard than the work.

6. Personal Locks are allowed if all three of the following conditions are met:

    a. An Authorized Tagging Authority has already obtained the DNO Isolation for the device to be locked. *Personal locks without the proper DNO Isolation are not allowed and are at risk of being removed by the Tagging Manager*.

b. The lock is clearly marked with the employer, craft, and individual's name. *Personal locks that are not identified 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. *Personal Locks left in place when the individual is not onsite are in violation of this procedure and are at risk of being removed by the Tagging Manager*.

5.3 DNO Tag Rules

1. Each crew performing work that requires Hazardous Energy Control shall obtain the appropriate DNO Isolations in accordance with this procedure. No crew shall perform work under another crew's isolation.

2. All DNO Isolations must be initiated by completing the isolation request form (Attachment LOTO-A12).

3. The Tagging Manager, LOTO Coordinator, or designated Authorized Tagging Authority can place DNO tags, locking devices, and locks.

4. All locking devices shall be accompanied by a DNO tag and must be traceable to the Holder through the Isolation Logs.

5. After the locking devices, tags, and locks are placed, the Authorized Tagging Authority will sign the Isolation Log as a Holder, indicating the position (open/close) of the device.

6. Locking devices/locks not accompanied by a DNO tag are at risk of being removed (refer to Section 7.0, Emergency Release Procedures).

7. DNO tags override any other tags present on a device. It means exactly what it says "Do Not Operate" the device. To minimize administrative paperwork a SUT tag may be present on the same device at the same time a DNO tag is placed on the device and the device effectively removed from service for the purpose of the requested LOTO.

8. DNO tags can have multiple Holders.

9. Authorized Tagging Authorities can remove locks they applied as a Holder after signing them as released on the Isolation Log.

10. Prior to removing a DNO Isolation, "ALL" Holders must have signed off the Isolation Log.

11. Only the Tagging Manager or LOTO Coordinator can authorize removal of DNO tags and locking devices.

12. Circuit breaker Locking Devices fit for the purpose shall be used for DNO Isolations in power panels. The circuit breaker Locking Devices may use a heavy-duty tie wrap for the Lock and the tag shall be affixed to the device.

5.4 SUT Tag Rules

1. An SUT caution/information tag may be applied to the same Energy Isolating Device at the same time as a DNO tag. 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 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 Authorized Tagging Authority's name on the tag.

5. SUT tags are generally used during Startup 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 are to be SUT tagged shall be identified with a color-coded sticker affixed to the circuit breaker. The SUT tag shall be placed in a group attached to the power panel door.

7. SUT tags shall only be removed when authorized by the Tagging Manager after receiving word that the piece of equipment has been accepted by the Owner as part of a turnover package for a system or subsystem submitted to the Owner by the Commissioning Manager.

5.5 SUO Tag Rules

1. SUO tags may only be placed when the Tagging Manager approves removal of the SUT tag and placement of the SUO tag.

2. SUO tags are placed on devices or pieces of equipment after the associated subsystem has been turned over to ZA-1 for operation.

3. After the tags are placed, the Authorized Tagging Authority will sign the Isolation Log as a Holder, indicating the status of the device as 'System Under Operation' (SUO).

4. SUO tags are for informational purposes only and signify the following:

   a. System is ready for normal operation and maintenance by the Owner's staff at the direction of the Startup Manager.

   b. The Owner's Safety LOTO Procedure shall control access to an operation of the equipment.

5. Once placed, SUO tags shall not be removed unless the subsystem has been returned to Startup Control (SUT) or project completion.

6. Power panel circuit breakers that are to be SUO tagged shall be identified with a color-coded sticker affixed to the circuit breaker. The SUO tag shall be placed in a group attached to the power panel door.

6.0 Sequence

After a need is determined for DNO Isolation, the following occurs:

1. The Authorized Tagging Authority requests a DNO Isolation for specific work activity by completing the Isolation Request (Attachment LOTO-A12).

2. The Tagging Manager 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 prepares the DNO Isolation for implementation (i.e., issues tags, locking devices, and locks).

4. The Authorized Tagging Authority or LOTO Coordinator locates and places the Energy Isolating Devices into the required position to properly isolate hazardous energy from the area or equipment to be protected.

5. The Authorized Tagging Authority or LOTO Coordinator affixes Locking Devices, Locks, and Tags to the Energy Isolating Devices, leaving a means to release any stored energy left in the system.

6. The Authorized Tagging Authority or LOTO Coordinator 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 Authorized Tagging Authority or LOTO Coordinator applies Locking Devices, Locks, and Tags to the means used to release stored energy (if applicable).

8. The Authorized Tagging Authority or LOTO Coordinator verifies effectiveness of isolation (by visual inspection, voltage testing, attempt to operate, sniffer, etc).

9. The Authorized Tagging Authority signs the Isolation Log as a Holder.

10. Affected Employees are notified by the Holder of the DNO Isolation and any special requirements for the work to be performed through completion of an STA (Attachment LOTO-A8).

11. After Affected Employees sign off on the STA, work may commence.

12. After the work is completed and the Holder has verified the proper restored condition of the area or equipment (e.g., cleanliness, complete reassembly, etc.), and notified all affected personnel working under the DNO Isolation that the isolation will be released, the Holder signs the Isolation Log as released.

13. The Authorized Tagging Authority removes the locks applied for the DNO Isolation after the Isolation Log has been signed. Only the Tagging Manager or the LOTO Coordinator can authorize removal of the Locking Devices and Tags.

14. The Tagging Manager 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 Tag 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 Tag, and only in accordance with the following stipulations:

1. The employee who is responsible for the Lock or Tag or is a Holder of the isolation is not present at the facility, and all reasonable efforts have been taken to contact the responsible employee.

2. All measures are to be taken to notify the employee before he/she resumes work.

3. All Permits To Work associated with the LOTO for which the affected Lock or Tag (or both) are associated with must be withdrawn from the field and verified by the Tagging Manager that they are in the Tagging 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 and the Holder's supervisor must walk down the work for which the LOTO was issued to cover to confirm no work is currently underway and the system/equipment is in condition to have the lock or tag (or both) safely removed.

4. The Holder's supervisor will sign the Isolation Log as released along side the Tagging Manager. Additionally, the entry shall be labeled as an "Emergency Release."

8.0 Permit to Work (PTW)

8.1 PTW Determination

The Tagging Manager shall determine if a PTW is required. The following circumstances shall require a PTW:

- When work is to be performed by Construction on systems under the control of Commissioning or Operations.

- When work is to be performed by Commissioning on systems under the control of Commissioning or Operations, except for required troubleshooting, problem solving, and optimization.

8.2 PTW Sequence

After the Tagging Manager determines a PTW is required, the following sequence occurs:

1. The Authorized Tagging Authority in charge of the work completes the requester section of the PTW form and submits it to the Tagging Manager.

2. The Tagging Manager reviews the PTW and reviews any required DNO Isolations.

3. The Tagging Manager 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 Safety and Health Manual and must be followed. Examples of other permits or plans which may be required are: confined space entry permit, hot work permit, safe work plan, and job hazard analysis.

5. After the PTW is completed and approved and any other safety requirements are satisfied, the original of the PTW form is given to the Authorized Tagging Authority requesting the PTW and serves as their work authorization.

6. PTWs must either be in the possession of the person performing the work or posted in the vicinity of the work or posted on the area Permit to Work posting board and accessible upon request by both workers and management.

7. After completion of the work, the Authorized Tagging Authority signs the PTW as complete and returns the PTW to the Tagging Manager.

Attachments:

LOTO-A1 System Under Test (SUT) Tag
LOTO-A2 System Under Operation (SUO) Tag
LOTO-A3 Do Not Operate (DNO) Tag
LOTO-A4 Electrical DNO Isolation Log
LOTO-A5 Mechanical DNO Isolation Log
LOTO-A6 Job Hazard Analysis
LOTO-A7 Permit to Work
LOTO-A8 Safety Task Assignment Report
LOTO-A9 Hard Hat Stickers
LOTO-A10 Lockout/Tagout Equipment Request Form
LOTO-A11 Authorized Tagging Authority List
LOTO-A12 Isolation Request

CAUTION SYSTEM UNDER TEST

THIS EQUIPMENT MAY OPERATE AT ANY TIME

OPERATION OF THIS EQUIPMENT IS BY AUTHORIZED PERSONNEL ACTING UNDER THE AUTHORITY OF THE UNDERSIGNED.

WORK TO BE PERFORMED MUST BE APPROVED BY THE UNDERSIGNED.

SYSTEM: _____

AUTHORIZED TAGGING AUTHORITY

_____

CAUTION SYSTEM UNDER TEST

THIS EQUIPMENT MAY OPERATE AT ANY TIME

:SEE OTHER SIDE:

REMARKS: _____

_____

_____

_____

_____

_____

_____

DO NOT REMOVE THIS TAG UNLESS AUTHORIZED TO DO SO!

CAUTION SYSTEM UNDER OPERATION

THIS EQUIPMENT MAY OPERATE AT ANY TIME

OPERATION OF THIS EQUIPMENT IS BY AUTHORIZED PERSONNEL ACTING UNDER THE AUTHORITY OF THE UNDERSIGNED.

WORK TO BE PERFORMED MUST BE APPROVED BY THE UNDERSIGNED.

SYSTEM: _____

AUTHORIZED TAGGING AUTHORITY

_____

CAUTION SYSTEM UNDER OPERATION

THIS EQUIPMENT MAY OPERATE AT ANY TIME

:SEE OTHER SIDE:

REMARKS: _____

_____

_____

_____

_____

_____

_____

DO NOT REMOVE THIS TAG UNLESS AUTHORIZED TO DO SO!

DANGER

DO NOT OPERATE

DNO TAG NO.: XXXXXX

SYSTEM: _____

EQUIPMENT TAG NO.:_____

PERMIT TO WORK NO.:_____

AUTHORIZED TAGGING AUTHORITY

_____

DANGER

DO NOT OPERATE

:SEE OTHER SIDE:

REMARKS: _____

_____

_____

_____

_____

_____

DO NOT REMOVE THIS TAG
UNLESS AUTHORIZED TO DO SO!

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Electrical DNO Isolation Log

Equipment Source Tag No.: _____

Supplied Equipment Tag No.: _____

Supplied Equipment Description: _____

_____

Tagging Manager

Note: Check box as appropriate.

☐ Const. _____

☐ Startup _____

☐ Ops _____

Tag No.	Print Name	Employer	Equipment Position/Status	Hold	Date/Time	Released	Date/Time

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Mechanical DNO Isolation Log

Equipment Tag No.: _____

Equipment Description: _____

_____

Tagging Manager

Note: Check box as appropriate.

☐ Const. _____

☐ Startup _____

☐ Ops _____

Tag No.	Print Name	Employer	Equipment Position/Status	Hold	Date/Time	Released	Date/Time

JOB HAZARD ANALYSIS POLICY

ZA-1 PREJOB SAFETY ANALYSIS	Job No. Page of JHA No.		Date:	New: Revised:
	Site:	Contractor:	Analysis By:	
	Job Description:	Proj. Mgr.:	Revised By:	
	Location:	Supt.:	Approved By:	

Sequence of Job	Potential Hazards	Recommended Action, Procedure, and/or Equipment

Craft Safety Representative: _____

BLACK & VEATCH Building a world of difference.	**Permit to Work**	PTW No.	

Request

Requested By: _____ _____ Signature _____ Company	Date: _____ Time: _____
System Code: (if applicable) _____	Date Needed: _____
Equipment Tag No.: (if applicable) _____	Time Needed: _____
Description of the Work:	Expected Duration of the Work:
	Mark-Up Drawings Attached: ☐ Yes ☐ No

Approval

DNO LOTO Required: ☐ Yes ☐ No

Additional Permits

Hot Work Permit: ☐ Yes ☐ No		Confined Space Entry: ☐ Yes ☐ No	
Safe Work Plan (JHA): ☐ Yes ☐ No		Other: ☐ Yes ☐ No	_____

Tagging Manager Comments:

Tagging Manager Approval: ☐ Yes ☐ No	Safety Manager Approval: ☐ Yes ☐ No If Additional Permits Required
_____ Signature	_____ Signature
_____ Date	_____ Date

Closure

PTW Closed Requester _____ Signature _____ Date	Work Completed:
PTW Closed Tagging Manager _____ Signature _____ Date	Comments:

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Safety Task Assignment Report

Our common goal: To safely build a quality project on time and within budget.

Date: _____

Time: _____

Project Name: _____

Supervisor Conducting STA: _____

Work Description:

Considerations:			
	☐ Hazards	☐ Employee Input	☐ Material
	☐ Work Procedures	☐ Personal Protective Equipment	☐ Time
	☐ Emergency Procedures	☐ Special Equipment	☐ Training

Summary:

Employee Comments:

Employee Name/Signature:							

White, Red, and Black

Blue, Red, and Black

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Lockout/Tagout (LOTO) Equipment Request Form

Contact Name: _____ Date: _____

Project Name: _____ Project and Phase: _____

Ship to Address: _____

_____

_____

Telephone Number: ( ) _____ Fax Number: ( ) _____

(Indicate the desired quantities for each line item and fax the completed forms to Construction Equipment & Fleet Services Center: (913) 390-5749.)

	Item	**Quantity**
1.	**LO/TO Starter Kit** Each Kit Contains: 100 - "Do Not Operate" Tags 100 - "Caution: System Under Test" Tags 100 - "System Under Operations" Tags 50 - Keyed Padlocks (2 keys each, 2" shank) 50 - "Unsafe – Do Not Use" Tags (ex. for damaged ladder) 50 - Multi-Lock Hasps (gang lock – 6 hole) 150 - Heavy-Duty Tie Wraps 150 - Light-Duty Tie Wraps 1 - Copy of LO/TO Program 300 - "Isolation Record" Form (3 tablets) 100 - "Permit to Work" Form (1 box)	(Kits)
	TAGS	
2.	"Do Not Operate" Tags (bunches of 100 - order by the bunch)	(x 100)
3.	"Caution: System Under Test" Tags (bunches of 100 – order by the bunch)	(x 100)
4.	"System Under Operation" Tags (bunches of 100 – order by the bunch)	(x 100)
5.	"Do Not Use" Tags (bunches of 50 – order by the bunch)	(x 50)
	LOCKS	
6.	Keyed Padlocks – individual keyed (boxes of 6 – order by the box)	(Boxes)
7.	Multi-Lock Hasps (gang locks)	
	LOCKOUT DEVICES	
8.	Single Pole Breaker Device	
9.	Double Pole Breaker Device	
10.	Multi-Pole Breaker Device	
11.	Group Lockout Box	
12.	Oversize Circuit Breaker Device	
13.	"No Hole" Circuit Breaker Device	

	Item	Quantity
14.	Fuse Lockout Device, 13/32” (6 Minimum)	
15.	Fuse Lockout Device, 9/16” (6 Minimum)	
16.	Fuse Blockout, ¼” – 9/32” – 9/16” (6 Minimum)	
17.	Fuse Blockout, 13/16” – 1 1/16” (6 Minimum)	
18.	Fuse Blockout Device, Blade Type (6 Minimum)	
19.	Pneumatic Lockout Device (6 Minimum)	
20.	Gate Valve Lockout Device (1” – 2 ½”)	
21.	Gate Valve Lockout Device (2 ½” – 5”)	
22.	Gate Valve Lockout Device (5” – 6 ½”)	
23.	Gate Valve Lockout Device (6 ½” – 10”)	
24.	Gate Valve Lockout Device (10” – 13”)	
25.	Ball Valve Lockout Device (1/4” – 1”)	
26.	Ball Valve Lockout Device (1 ¼” – 3”)	
27.	Round Handle Valve Lockout Device (1” – 2 ½”)	
28.	Round Handle Valve Lockout Device (2 ½” – 5”)	
29.	Round Handle Valve Lockout Device (5” – 6 ½”)	
30.	Round Handle Valve Lockout Device (6 ½” – 10)	
31.	Round Handle Valve Lockout Device (10” – 13”)	
32.	Cable Lockout Device, 6 Foot Cable (Minimum 6)	
33.	8 Foot Cable for Above (Minimum 5)	
	OTHER SUPPLIES	
34.	Heavy-Duty Tie Wrap (bunches of 150 – order by the bunch)	(x 150)
35.	Light-Duty Tie Wrap (bunches of 150 – order by the bunch)	(x 150)
36.	“I Got Tagged” Hard Hat Stickers (bunches of 50 - order by the bunch)	(x 50)
37.	“Authorized Tagging Authority” Hard Hat Stickers (bunches of 50 - order by the bunch)	(x 50)
	FORMS	
38.	Permit To Work Forms (100 per box – order by the box)	(Boxes)
39.	Safety Task Assignment Forms (50 per tablet - order by the tablet)	(Tablets)
40.	Job Hazard Analysis Forms (50 per tablet - order by the tablet)	(Boxes)

(Fax completed form to Construction Equipment & Fleet Services Center: (913) 390-5749.)

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Authorized Tagging Authority List

Date Updated _____

Construction Authorized Tagging Authorities			
Name	Employer	Title	Off-Site Phone Number

Note: Add rows as required.

Startup Authorized Tagging Authorities			
Name	Employer	Title	Off-Site Phone Number

Note: Add rows as required.

Operations Authorized Tagging Authorities			
Name	Employer	Title	Off-Site Phone Number

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Isolation Request

System: | Startup Pkg:

Requested By: | Employer:

Item	Equipment Tag	Position	Item	Equipment Tag	Position

Tagging Manager Approval: | Date

Appendix B

Environmental Permits

(Later)

Appendix C

Injury and Illness Prevention Program (IIPP) and Code of Safe Practices

1.0 Policy

1.1 BVCI believes that all employees and the Owner benefit from a safe and healthful work environment. BVCI is committed to maintaining an injury and illness free work place and to complying with all applicable laws and regulations governing work place safety. To achieve this goal, BVCI has adopted this Injury and Illness Prevention Program (IIPP). This Program requires that all managers, supervisors, and employees work together to identify and eliminate conditions and practices that detract from a safe and healthy work environment.

1.2 Any deviation from this policy must have the written approval of the BVCI Project Director.

2.0 Scope

2.1 This Injury and Illness Prevention Program applies to all ZA-1 Project operations. It covers all employees, permanent and temporary. It also covers contract employees over whom BVCI exercises supervision and/or direction.

2.2 Where government agencies provide more stringent regulations than the IIPP, the more stringent regulations shall apply.

2.3 The Site Specific Safety Manual shall serve as an adjunct to the IIPP. BVCI employees and subcontractors will comply with the provisions of both documents.

3.0 Responsibility

3.1 All employees are expected to work conscientiously to implement and maintain the IIPP. The Project Director shall have the responsibility and authority to implement this program and he or she shall be responsible for the safety and health of all employees assigned to the office.

3.2 The Program Administrator for the ZA-1 Project is the Project Director. At all other field locations, the Field Project Manager or Resident Engineer shall be designated as the Program Administrator. Any questions regarding this Program should be directed to the Program Administrator.

3.2.1 Senior Management

Senior Management will set policy and provide leadership by participation, example and a demonstrated interest in the Program. Senior Management is defined as the CEO, BVCI, ZA-1, and the Manager of Safety and Health.

Responsibilities include the following:

- Developing policy.
- Allocating adequate resources.
- Ensuring responsibility.
- Reviewing and evaluating results.

3.2.2 IIPP Program Administrator

The Program Administrator is responsible for ensuring that all provisions of the IIPP are implemented.

3.2.3 Managers and Supervisors

First line managers and supervisors are responsible for ensuring that all employees are familiar with the provisions of the IIPP, and BVCI's policies and procedures regarding safety and health. They are expected to do everything within their control to ensure that employees are provided with a safe and healthy work place.

Responsibilities include the following:

- Keeping abreast of safety and health regulations affecting the operations they supervise.
- Establishing and communicating safety rules and requirements.
- Ensuring that each employee is able to complete each assigned task safely.
- Ensuring that employees receive general safety training, such as the Hazard Communication System described in Paragraph 7.1.
- Conducting job specific training.
- Ensuring that employees follow safety requirements and work in a safe manner.
- Making sure that equipment, tools, and machines are in safe operating condition.
- Making available the necessary personal protective equipment and ensuring employees use it.

- Identifying unsafe and unhealthy conditions and taking actions to correct them.

- Taking actions to correct unsafe conditions identified by other employees.

- Investigating accidents to discover their causes and taking corrective action to prevent their recurrence.

4.0 Compliance

Managers and supervisors are responsible to ensure that BVCI safety and health policies and requirements are clearly communicated to and understood by employees. They are expected to enforce the rules fairly and uniformly.

All employees are responsible for working in a safe manner, following safety requirements and instructions, and assisting supervisors and managers in maintaining a safe work environment.

4.1 As a part of an employee's regular performance review, the employee will be evaluated on his or her compliance with safe work practices and adhere to BVCI's safety and health policies and standards.

4.2 Employees who make a significant contribution to the improvement or maintenance of a safe and healthy work place as determined by their supervisor will receive written acknowledgement which will be maintained in the employee's personnel file.

4.3 Employees who fail to follow safe work practices, or who violate BVCI's safety and health policies and standards, will be subject to disciplinary action, up to and including removal from the project. Refer to the BVCI Safety Manual for more information on safety and health violation procedures.

5.0 Communication

BVCI management recognizes that open, two way communication between management and employees is essential to the establishment and maintenance of a productive and injury and illness free work place. The following methods of communication have been established to exchange information on safety and health issues between management and employees.

5.1 The New Employees Orientation will include a review of the IIPP, the site specific safety manual and a discussion of the BVCI Safety Manual.

5.2 The BVCI Safety and Health Department will publish memoranda and/or hold office meetings to discuss pertinent safety and health topics. Employees are encouraged to submit topics and items for discussion to the IIPP Program Administrator.

5.3 All employees are encouraged to use the open-door policy and inform their supervisor, members of the safety committee, location of safety managers, or BVCI safety and health management and staff of any matter which the employee perceives to be a work place hazard or a potential work place hazard.

5.4 Retaliation against an employee for reporting hazards or potential hazards, or for making suggestions related to safety and health in the work place will not be tolerated. A method for the anonymous submission of safety hazards to project leadership will be adopted.

6.0 Safety Training Statement

The goal of the safety training program is to reduce the potential for injury in the work place. We accomplish this by developing safe work habits and attitudes.

The office supervisors (Administrative Assistant or the Field Project Manager) will ensure that initial safety training and orientation is provided for all new employees as well as current employees. The training shall be documented using the New Employee Safety Checklist. The training for current employees shall be documented on the Department Safety Training Record and on the Individual Safety Training Record.

As new conditions, equipment, hazards, or chemicals are introduced into the work environment, the supervisor shall review current safety practices and inform the staff of any new practices to accommodate the changing conditions. If job assignments change, employees will be informed of hazards and methods used to reduce or eliminate the hazards before beginning the new assignment.

7.0 Identification, Evaluation, and Abatement of Workplace Hazards

Hazard control is the heart of an effective IIPP. The ZA-1 Project hazard control practice is to identify hazards that exist or that develop in the workplace, to describe how to correct those hazards, and to implement procedures to prevent their recurrence.

7.1 Hazard Communication System

The Hazard Communication System is a method through which information about various substances or chemicals can be communicated to each employee.

The system is based on information that we obtain from manufacturers about the various substances and chemicals we use, and any cautions or dangers that accompany their use in the work place. This written communication is called a Material Safety Data Sheet (MSDS) and is available to all employees upon initial hire date, and upon request to their supervisor at any time. MSDSs for chemicals currently in use at the ZA-1 Project are located in the HAZCOM Manual.

Each supervisor is responsible for obtaining current information on any new chemicals introduced to the department. After employees have been trained, the MSDSs should be forwarded to the IIPP Program Administrator. The IIPP Program Administrator shall maintain all MSDSs.

7.2 Individual Employee Safety Suggestions

All employees are encouraged to identify, report, and/or correct hazards and unsafe practices. Safety suggestions may be submitted using Employee Safety Suggestions. Anonymous suggestions will be possible for employees who desire not to be identified.

7.3 Formal Assessment of Hazards

Inspection of the workplace is the primary tool to identify unsafe conditions and practices. While all employees are encouraged to identify, report, and/or correct hazards and unsafe practices, certain situations require formal evaluation and documentation. A site safety audit will be performed at least weekly be the project field manager or his/her representative. Normally, hazards identified by the audit should be corrected within 24 hours of the audit. Imminent dangers to employees shall be corrected immediately. Records of these audits and the steps taken to correct hazards shall be kept for at least 1 year.

Hazards which could cause serious bodily harm or death must be corrected immediately. If they cannot be corrected, the operation, process, or procedure must be stopped immediately. In addition, the IIPP Program Administrator will advise Senior Management regarding the correction or shutdown.

Each supervisor is responsible for continually assessing the safety of his or her work place. Supervisors must be continually on the alert for unsafe conditions and practices.

A record of all Safety Committee meetings shall be maintained by the IIPP Program Administrator.

8.0 Accident Investigating and Reporting

It is the policy of BVCI to conduct a thorough investigation of all injuries occurring in the work environment.

The primary goal of these investigations is to prevent any future incidents. All information gleaned from the investigation will, when appropriate, result in changes in policy and practices or in physical repairs. These reports will be used in preparing appropriate communication to out Workers' Compensation carrier as required by the carrier and any applicable state and federal laws.

When an injury occurs, the supervisor is responsible for taking initiative to render first aid and obtain professional medical attention if necessary.

The following procedures are considered good investigative practice:

GO	to the scene of the incident immediately
TALK	with the injured employee if possible. Also speak with available witnesses to determine what happened and how it happened. Facts are what you are looking for, not something or someone to blame.
LISTEN	to incidental conversations as well as those individuals directly interviewed.
ASK	for ideas of prevention of this type of injury in the future.
LOOK	for possible causes, unsafe practices, or conditions that need to be corrected.
SEEK	possible solutions from other knowledgeable individuals.
WRITE	the accident report.
FOLLOW-UP	to insure follow-through on your recommendations.
PUBLISH	corrective actions that will be taken in order to benefit others and to emphasize your commitment to safety.

Code of Safe Practices
ZA-1 Project
Mission Statement

To safely complete the ZA-1 Project under budget and within schedule, while being sensitive to communities and general public affected by this project as well as being responsible, accountable stewards of the environment.

To most effectively meet this mission statement, the following general safe practices will be followed, in addition to specific requirements listed in the BVCI Safety and Health Manual.

1. All persons shall follow these safe practice rules, render every possible aid to safe operations, and report all unsafe conditions or practices to the foreman or superintendent.
2. Foremen shall insist on employees observing and obeying every rule, regulation, and order as is necessary for the safe conduct of the work and shall take such action as is necessary to obtain observance.
3. All employees shall be given frequent accident prevention instructions. Instructions shall be given at least every 10 working days.
4. Anyone known to be under the influence of drugs or intoxicating substances that impair the employee's ability to safely perform the assigned duties shall not be allowed on the job while in that condition.
5. Horseplay, scuffling, and other acts that tend to have an adverse influence on the safety or well-being of the employees shall be prohibited.
6. Work shall be well planned and supervised to prevent injuries in the handling of materials and in working together with equipment.
7. No one shall knowingly be permitted or required to work while the employee's ability or alertness is so impaired by fatigue, illness, or other causes that it might unnecessarily expose the employee or others to injury.
8. A confined space is a space that: 1) has limited access or egress, 2) is not normally occupied, and 3) is large enough to enter and perform work. No confined space will be entered for any reason unless it is cleared for access by project safety. A completed confined space permit will be used to track and authorize entrance.
9. Employees shall be instructed to ensure that all guards and other protective devices are in proper places and adjusted, and shall report deficiencies promptly to the foreman or superintendent.
10. Crowding or pushing when boarding or leaving any vehicle or other conveyance shall be prohibited.
11. Workers shall not handle or tamper with any electrical equipment, machinery, or air or water lines in a manner not within the scope of their duties, unless they have received instructions from their foreman.
12. All injuries shall be reported promptly to the foreman or superintendent so that arrangements can be made for medical or first aid treatment.

13. When lifting heavy objects, the large muscles of the leg instead of the smaller muscles of the back shall be used.
14. Proper personal protective equipment (PPE) will be worn in all construction areas of the Project.
15. Materials, tools, or other objects shall not be thrown from buildings or structures until proper precautions are taken to protect others from the falling objects.
16. Specifically, a summary of the safe work practices are listed in Figure 24 - OCCUPATIONAL SAFETY AND HEALTH REGULATIONS.

Appendix D

Heat Illness Prevention Procedures

ZA-1 Project

Appendix D
Heat Illness Prevention Procedures

California employers with any outdoor places of employment must comply with the Heat Illness Prevention Standard T8 CCR 3395. This procedure has been created to address the requirements and to establish the minimum steps necessary to comply with the Standard.

Responsibilities

The ZA-1 Project Field Loss Control Manager shall have overall responsibility for compliance with this procedure. Subcontractor safety representatives shall be responsible for implementing heat illness prevention procedures that meet or exceed this procedure for their employees.

Procedure

Provision of Water

- Subcontractors will provide sufficient drinking water to allow each employee a minimum of 1 quart per hour.
- Water containers shall be sealed to identify tampering.
- Drinking locations will be provided with sufficient water as identified above, disposable drinking cups to ensure cleanliness, and a trash receptacle to keep the work area clean.
- Subcontractors will check the water level of all containers often enough to ensure there remains a sufficient supply of cool drinking water. Subcontractors will refill the containers with water and ice when the container supply gets to less than 25 percent of capacity.
- When the temperature in the work area exceeds 90 degrees, actions shall be taken (addition of ice to the water, etc.) to keep the water cool.
- Water containers shall be kept as close to the work area as is reasonable, but no more than 50 feet away from the work area.
- Subcontractors shall ensure the water containers are kept clean and in a sanitary condition.

- Supervisors will include heat illness prevention, including sufficient water breaks, in each daily JSA or safety meeting.

- Training on the importance of adequate water will be included in initial worker orientation.

Access to Shade

- Subcontractors shall ensure there is sufficient shade to accommodate at least 25 percent of their employees on the shift and sufficient seating structures to allow employees to sit and rest without contacting bare ground.

- If break trailers or vehicles are used to provide for this requirement, the trailer or vehicle must have air conditioning and the air conditioning must be on.

Monitoring the Weather

- The National Weather Service or another effective weather reporting agency will be monitored often enough to be able to predict when high heat periods will take place to ensure sufficient water and rest periods will be provided.

- Weather will be monitored on a daily basis to determine if and when the need for modified schedules, increasing water breaks, increased break periods, etc., are required.

Handling a Heat Wave

- During a heat wave or heat spike, consideration will be given to modify the schedule to allow for sufficient protection against heat illness.

- If it is not possible to modify the schedule, additional communications with all employees, i.e. tailboard meeting, will be provided to reinforce heat illness prevention.

- Workers will be paired with a "buddy" to be on the lookout for signs and symptoms of heat illness and to ensure emergency procedures are initiated when someone displays signs or symptoms of heat illness.

High Heat Procedures – When the Temperature Exceeds 95° F

- Subcontractors will ensure effective communication by voice, observation, or electronic means is maintained so employees at the worksite can contact a supervisor when necessary.

- Subcontractors will observe their employees for alertness and signs and symptoms of heat illness.

- Subcontractors will remind employees throughout the work shift to drink plenty of water.

- Subcontractors will closely supervise new employees or assign a "buddy" or more experienced coworker for the first few weeks of the employee's employment, unless the new employee can show he or she has been doing similar work recently.

Acclimatization

Acclimatization is the temporary and gradual physiological change in the body that occurs when the environmentally induced heat load to which the body is accustomed is significantly and suddenly exceeded by sudden environmental changes.

Inadequate acclimatization can imperil anyone exposed to conditions of heat and physical stress significantly more intense than what they are used to. Employers are responsible for the working conditions of their employees and they must act effectively when conditions result in sudden exposure to heat their employees are not used to.

- Subcontractors will monitor the weather and in particular be on the lookout for sudden heat waves or increases in temperatures to which employees have not been exposed for several weeks.

- During a heat wave or heat spike, consideration should be given to modifying the work schedule if possible.

- During summer months, consideration should be given to starting the work shift earlier in the day or later in the evening.

- For new employees, subcontractors will try to find ways to lessen the intensity of the employees' work during a 2 week break-in period (such as scheduling slower paced, less physically demanding work during the hot parts of the day and the heaviest work activities during the cooler parts of the day).

- Subcontractors will be extra vigilant with new employees and stay alert to the presence of heat related symptoms.

- The subcontractor will assign new employees a "buddy" or experienced coworker to watch each other closely for discomfort or symptoms of heat illness.

- During a heat wave, subcontractors will observe all employees closely and be on the lookout for possible symptoms of heat illness.

- Subcontractor training for employees and supervisors will include the importance of acclimatization, how it is developed, and how these procedures address it.

Emergency Response Procedures

- Subcontractors will refer to the BVCI Emergency Plan for directions to the closest health care provider.

- When an employee is showing signs or symptoms of possible heat illness, the subcontractor will take immediate steps to keep the employee cool and comfortable once emergency responders have been called.

- During a heat wave or hot temperatures, employees will be reminded and encouraged to immediately report to their supervisor any signs or symptoms they are experiencing.

- When an employee displays signs or symptoms of heat illness, a trained first aid worker or supervisor will check the sick employee and determine whether resting in the shade and drinking cool water will suffice or if emergency service providers will need to be called. When in doubt, the first aid responder will notify safety and ask for offsite responders to be called.

- Subcontractor training for employees and supervisors will include specifics of these emergency procedures.

Heat Illness Prevention Training Plan

1.0 Heat Illness Prevention Plan

ZA-1 Project employees shall receive training at least annually on the following Heat Illness Prevention Plan.

1.1 Heat Illness Definition

Heat illness is a group of serious medical conditions that occur when the body cannot cope with the heat and can include the following:

- Heat Cramps
- Heat Exhaustion
- Heat Syncope
- Heat Stroke

1.2 Causes of Heat Illness

Certain working conditions and the environmental conditions contribute to heat illness. These risk factors include the following:

- Air temperature
- Relative humidity
- Radiant heat from the sun and other sources
- Conductive heat sources such as the ground
- Air movement (or lack of)
- Workload severity and duration
- Protective clothing worn by person
- Personal protective equipment worn by person

In addition to environmental risk factors, there are personal risk factors that can contribute to heat illness as follows:

- Age – The very old and the very young are more susceptible to the heat.
- Weight – People who are overweight are more at risk for heat illness.
- Physical fitness – If you have a low level of physical fitness, you are more susceptible to the heat.
- Metabolism.
- Degree of acclimatization – If you have not been working in the heat for very long, you are not used to it.
- Prescription drugs – Certain prescription drugs dehydrate you, so you need to drink more water if you are taking these prescriptions.
- Water consumption – Consuming water prior to work and throughout the day will reduce your risk for heat illness.
- Alcohol consumption – Alcohol dehydrates the body.
- Caffeine consumption – Caffeine (found in coffee and energy drinks like "Rockstar" and "Red Bull") dehydrates the body.
- Other conditions that affect the body's water retention or physiological responses to heat.

Your personal risk factors may put you at a higher risk of developing heat illness. If you have any personal risk factors, you must be especially cautious in the heat and do the following:

- Drink plenty of water. The most important thing you can do to prevent heat illness is drink plenty of water: small quantities and frequent intervals.
- Acclimate to the weather
- Report any signs of heat illness to your supervisor immediately

Thirst is not an indicator of dehydration – if you are thirsty, you are already dehydrated.

1.3 Acclimatization

Acclimatization, or getting used to the heat by being gradually exposed to it, peaks in most people within 4 to 14 days of regular work for at least 2 hours per day in the heat.

Professionals must take extra precautions until acclimated.

Professionals must drink plenty of water and get out of the sun; recovery is needed from the heat in order to prevent heat illness.

Acclimatization is also needed for employees returning to work from prolonged absence, recent illness, or a recent move from cold to hot climates.

1.4 Types of Heat Illnesses

Heat Cramps –Caused by performing hard physical labor in a hot environment.

Heat cramps are painful spasms of the muscles caused by the body's loss of salt and by lack of water replenishment. Excess salt can build up in the body if water is not replaced.

Treatment: Drink water, rest in the shade, get near a fan, spray the person with water, and massage the cramp. Severe cramps require medical attention.

Heat Syncope (Fainting) – a person who is not acclimated to hot environments and who stands erect and immobile in the heat may faint. Blood vessels in the skin and in the lower part of the body dilate, which may cause blood to pool there rather than return to the heart to be pumped to the brain, causing dizziness or fainting.

Treatment: This condition is usually short-lasting and greatly improves after lying down in a cool environment. However, if the fainting lasted for more than a minute or is accompanied by changes in mental state, get immediate medical attention. Call 911 or follow your company procedure.

Heat Exhaustion – Results from loss of fluid through sweating and not drinking enough fluids. Signs of heat exhaustion include cool, moist, pale, flushed, or red skin; heavy sweating; headache; nausea or vomiting; dizziness; giddiness; and extreme weakness or fatigue. The skin is clammy and moist while body temperature will be near normal or slightly elevated.

Treatment: Get the person to a cooler area. If person is fully awake, water may be administered slowly. Remove tight clothing and apply cool compresses. *If they refuse water, vomit, or lose consciousness, get immediate medical attention by calling 911 and notifying your supervisor.*

Heat Stroke is the most serious heat illness. This occurs when the body's system of temperature regulation fails and the body temperature rises to critical levels. This is a MEDICAL EMERGENCY! Immediately dial 911 and notify your supervisor if a coworker shows these signs and symptoms.

Signs and Symptoms: Sweating stops and confusion; irrational behavior; loss of consciousness; convulsions (usually) hot, dry skin; and high body temperature (105.8° F) appear which may lead to death.

Remember Heat Stroke is a Medical Emergency!

Victims of heat stroke usually die unless treated promptly. Their medical outcome depends on promptness of first aid, how quickly you can cool them down, and the victim's physical health.

Before Help Arrives – Have them lie down in a shady area or get them indoors. Soak clothing in cool water or remove clothing and gently apply cool water to the skin followed by fanning to stimulate sweating.

Apply ice packs to the groin and armpits.

1.5 Prevention of Heat Illness

- Water/Fluids: In accordance with Cal/OSHA Section 3395--1 quart of water must be provided per person per hour. Water supplies must be replenished each day and/or throughout the day as necessary to maintain this amount per person.

- Shade: The job trailer, trees, under structures/buildings, and a running vehicle with air conditioning are all good sources of shade.

- Acclimatization.

- Rest breaks.

- Prompt medical attention for early warning signs of heat illness.

- Never allow employees to go home if you suspect heat illness.

1.6 Provisions for Shade

Shade means blockage of direct sunlight. Do not sit in a hot car for shade unless the air conditioner is running.

Employees suffering from heat illness or believing a preventive recovery period is needed are provided access to a shady area for no less than 5 minutes.

Access to shade is permitted at all times.

- Direct sun can add as much as 15 degrees to the heat index.
- If possible, take your breaks in the shade and drink plenty of water during your break.
- Wide brim hats can decrease the impact of direct heat.
- Umbrellas and canopies can create shade.

Identify sources of shade at each specific job location.

1.7 Emergency Procedures

Effective treatment requires action when the following early warning signs appear:

- Headache.
- Muscle cramps.
- Unusual fatigue.

Symptoms can progress to a worsening condition, unusual behavior, nausea, vomiting, weakness, rapid pulse, moist or dry skin, fainting or loss of consciousness.

When in doubt, call 911 from a landline.

In accordance with Cal/OSHA Section 3395, know your jobsite location in order to provide clear and precise directions to the victim for emergency medical responders. If the jobsite is remote or hard to find, it may be necessary to transport the affected employee to a different location in order to be reached by the emergency medical responders. Also, an employee may be designated to flag down and guide in the emergency medical responders.

For jobsite specific emergency procedures and access points, refer to your jobsite's Emergency Action Plan (EAP).

Appendix E

PG&E Field Orientation Manual