

Contractor Safety, Health and Environmental Handbook



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Contractor Safety, Health and Environment Handbook

Please note that the Contractor's Safety, Health and Environment Handbook is part of the overall program which includes policies and Terms and Conditions. Where there are variations between documents in matters of safety, health, environmental this handbook shall take precedence over the contractor agreement (limited only to sections related to safety, health or environmental).



The Frog, Switch & Manufacturing Company

CONTRACTOR SAFETY, HEALTH & ENVIRONMENTAL HANDBOOK

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Contractor Safety, Health & Environmental Handbook

SCOPE AND APPLICATION

The rules contained in this Handbook apply to all categories of contracted work activity on Frog Switch property. Frog Switch property includes all property owned, leased, operated or controlled by Frog Switch and includes entry roads, parking lots, grounds, and offices. Categories of contracted work are as follows:

- Construction
- Maintenance
- Repair and Services
- Consulting

Frog Switch will not hire a contractor for the long or short term until the contractor is aware of and agrees to observe the rules and safe work practices contained in this Handbook applicable to the category of work the contractor will be providing.

Consult your contact if you have any safety, health or environment questions about your work. Under no circumstances should you ever take unnecessary risks.

For the purpose of this document the term contractor refers to contractor and their subcontractors and their employees.

Introduction

Safety is a fundamental value at Frog Switch and as such will not be compromised. The Safety, Health and Environmental performance of Contractors working on Frog Switch property can have serious impact not only on their employees but the employees, equipment and property of Frog Switch as well. Frog Switch is committed to conducting its business safely and in an ethically, socially, and environmentally responsible manner that will protect human health, natural resources, and the environment in which we live.

By issuing these rules and work practices and insisting upon compliance with them, Frog Switch does not undertake to manage, direct, control or otherwise assume responsibility for the safety performance of Contractors, nor does Frog Switch assume any duty with respect to the safety of the contractor's or subcontractor's employees, invitees or licensees, not otherwise existing under Common Law, Statute and/or Regulation. These rules are intended to ensure safe work performance by contractors, but are in no manner intended to alter the status of contractors as Independent Contractors as defined by Common Law, Statute and or Regulation.

The Safety, Health and Environmental rules and work practices contained in this Handbook require the performance of injury-free work and minimizing the environmental impact by contractors under contract with Frog Switch. These rules and work practices in no way relieve contractors of their obligation to comply with all applicable federal, state, and local laws, rules, regulations, and orders. These rules are minimum requirements and contractors will be expected to observe and establish for the work being performed such additional rules and work practices as may be necessary. Contractors must ensure the abatement/correction of all at-risk conditions and behaviors.

Contractor employees are to be qualified and trained in all applicable Safety, Health and Environment issues before beginning work. Contractors will be required to attend Frog Switch site safety training sessions at least annually. Contractors are responsible for conveying information presented at annual or periodic training sessions to their employees and to their subs' employees. Contractors are to conduct periodic employee safety training with their employees and throughout the contract work period. Contractors are responsible for instructing each employee in job-related hazards, safe work behaviors, environmental impacts, and actions to take in the event of emergencies. The designated Frog Switch representative will monitor these activities.

Contractor supervision is responsible for the continued observation and coaching for adherence to safety compliance rules, work practice behaviors and conditions. Frog Switch reserves the right to amend or add to its established rules, procedures and regulations affecting safety, health, environment and fire protection at any time.

1.0 Pre-Job Safety Health and Environmental (SH&E) Checklist Communication

For each job, before reporting to the job site, the contractor supervisor or representative must meet face-to face with the Frog Switch representative responsible for the work and discuss the work to be performed and any specific safety requirements of the job. The purpose of the pre-job meeting is to discuss requirements for the work, and hazards of the contracted work as they relate to interaction with Frog Switch operations and the contractor. The Pre-Job SH&E Checklist will be completed and signed by the Frog Switch representative responsible for the work and the contractor supervisor or contractor representative. The contractor representative, by signing the Pre Job SH&E Checklist Form (FS CON-1), agrees to review the information with the appropriate contractor and sub-contractor employees doing the work. For frequently performed tasks which are identical in scope and hazard, a previously completed Pre-Job SH&E Checklist may remain applicable for up to *one* year.

1.0	PRE-JOB Safety, Health, and Environmental CHECKLIST			FS CON-1	FROG SWITCH MFG. CO
	Date	PO		Location	
	Job Description			Phone	
PRODUCTION HAZARDS		EMERGENCY RESPONSE		SPECIAL REQUIREMENTS	
	CONTRACTOR SAFETY RULES (See Handbook Section for more details)	Applicable YES	NO	Permit Reqd	COMMENTS (Required)
2.0	BARRICADES				
3.0	BORROWED EQUIPMENT				
4.0	CONFINED SPACES				
5.0	CONSTRUCTION TRAILERS				
6.0	CONTRACTOR TRAINING				
7.0	CRANE AND MOBILE EQUIPMENT				
8.0	ELECTRICAL HAZARDS				
9.0	ENERGY CONTROL LOCKOUT				
10.0	ENVIRONMENTAL MANAGEMENT				
11.0	EXCAVATIONS/DIGGING DRILLING(PERMIT				
12.0	EXPLOSIVES				
13.0	EXPLOSIVE-ACTIVATED TOOLS				
14.0	FIRE PREVENT/PROTECTION				
15.0	FLAMMABLE & COMBUSTIBLE HAZARDS				
16.0	GAS HAZARDS				
17.0	HAZARD SUBSTANCES & HAZ WASTE				
18.0	HORSEPLAY				
19.0	HOUSEKEEPING				
20.0	LASERS				
21.0	MEDICAL/EMERGENCY RESPONSE/EVAC				
22.0	MOBILE EQUIPMENT GROUNDING				
23.0	OVERHEAD WORK-FALL PROTECTION				
24.0	PERSONAL PROTECTIVE EQUIPMENT				
25.0	PIPELINES				
26.0	PNEUMATIC TOOLS AND LINES				
27.0	RADIATION				
28.0	RAIL SAFETY AND RAIL ROAD TRACKS				
29.0	SAFE WORK ENVIRONMENT				
30.0	SAFETY MONITORING/AUDITING**				
31.0	SEWERS				
32.0	VEHICULAR TRAFFIC				
33.0	WELDING AND BURNING (Hot Work Permit)				
34.0	WORKING ON/NEAR ENERGIZED ELECT EQUIP/OVERHEAD LINES (Elect Permit)				
35.0	SITE SPECIFIC EMERGENCY CONTACTS				

**Monitoring – Frog Switch – Who? What? Where? When? | **Monitoring – Contractor – Who? What? Where? When?

Signed Frog Switch Representative

Date

Signed Contractor Representative

Date

- 1.1 A contractor representative must meet daily with the designated Frog Switch representative before beginning work to ascertain any changed operating conditions which may relate to safe performance of the contracted work and to secure any required work permits.
- 1.2 The contractor is responsible for developing and maintaining an appropriate emergency evacuation plan consistent with applicable regulations. The contractor is to review the evacuation plan with all employees. In addition, the contractor and sub-contractors are responsible for coordinating with Frog Switch in determining applicable emergency response procedures for releases or spills that can affect the environment and informing all employees of the procedures. The contractor shall also investigate all releases or spills that can affect the environment and investigate any environmental enforcement citations from environmental regulators. The contractor shall prepare a written investigation report and provide a copy to the Frog Switch representative.
- 1.3 The designated Frog Switch representative or designee will monitor contractors' work. Monitoring includes such things as inspection of the work site; review of necessary work permits and gas checks; and observing whether Frog Switch safe work rules and practices as set forth in this Handbook are being followed. The contractor must also monitor its employees during the job to ensure compliance as well.
- 1.4 Frog Switch in its discretion may stop or suspend work in the event the contractor does not comply with established Safety, Health and Environmental regulations. Violation of any safety rule or work practice in this Handbook may be sufficient cause for termination of contractor work at Frog Switch.
- 1.5 Communications with the contractor should be through the designated Frog Switch representative except in cases of imminently dangerous safety, health or environmental conditions or violations. The contractor shall contact the plant Environmental Department as soon as a spill occurs.
- 1.6 Only trained and authorized contractor employees are permitted to operate any type of equipment.
- 1.7 Contractor employees are not to enter areas where performance of the contracted work does not require their presence.
- 1.8 Contractor supervision must investigate all injury and non-injury incidents involving their employees. For OSHA recordable injury cases, high potential, and property damaging incidents, a written investigation report must be prepared and a copy provided to the designated Frog Switch representative. The report is to include the corrective actions taken to prevent recurrence.
- 1.9 Contractors, their agents or vendors who perform labor or services on Frog Switch property must have and administer a formal substance abuse policy. The manufacture, distribution, dispensation, possession, sale or use of alcohol, illegal drugs on Frog Switch property is strictly prohibited. Contractor employees when reporting to work and while on the job on Frog Switch property are required to be fit for work and free from the effects of alcohol, illegal drugs, and the abuse or misuse of prescribed drugs and over-the-counter medications. Contractor employees who do not meet these requirements are to be removed from the work site immediately by their employer. Frog Switch retains the right to refuse entry to and have removed from its property any person who Frog Switch believes is in violation of the contractor substance abuse policy.

Contractor employees taking prescribed drugs or over-the-counter medications are responsible for following the instructions provided by the prescribing physician and the manufacturer of such medications.

- 1.10 Frog Switch forbids the possession of firearms and deadly weapons by Contractor employees on Frog Switch property. Contractors are responsible to enforce this policy and Frog Switch retains the right to refuse entry to any person from its property who it believes is in violation of the Frog Switch policy.
- 1.11 Entry of contractors and their employees onto Frog Switch property constitutes consent to inspection of vehicles and personal effects when entering, while on or upon leaving Frog Switch property. Anyone refusing to permit inspection will be barred from Frog Switch property.
- 1.12 Frog Switch believes that all employees are entitled to a safe, non-threatening workplace and adheres to a Zero Tolerance Policy. Any form of violence, harassment or threatening behavior will not be tolerated. Contractors and their employees are expected to adhere to this policy. Any employee violating this policy is subject to removal from Frog Switch property. This policy prohibits retaliation against any employee who, in good faith, brings forth a complaint of violent, harassing, threatening or intimidating behavior.

2.0 BARRICADES

- 2.1 Contractors, where necessary, must take proper measures to protect pedestrian and vehicular traffic.
- 2.2 All exposed sides of an opening or work area must be properly barricaded by barricades, tape, signs, warning devices or whatever it takes to make the area safe.
- 2.3 Every floor hole and open-sided floor, platform or runway 4 feet or more above adjacent floor or ground level into or off which a person can accidentally walk must be guarded by a standard hand railing and toe board or cover.
- 2.4 Flaggers or watch persons are to be used for additional protection when deemed necessary by the contractor or the designated Frog Switch representative.
- 2.5 Keep all tools and equipment inside the barricaded area where possible.
- 2.6 Upon completion of work, all barricades, signs, and warning devices must be removed and returned for storage according to the sound housekeeping practices.

3.0 BORROWED EQUIPMENT

- 3.1 Permission to use Frog Switch equipment must be coordinated through the designated Frog Switch representative. Contractor employees are not permitted use of Frog Switch equipment for any purpose before receiving the approval of the designated Frog Switch representative. If such un-permitted use occurs, it is at the sole risk of the Contractor and the violating employee(s).
- 3.2 If Frog Switch equipment is borrowed by a contractor, it is provided in an "as is" condition with no warranties as to its condition. It is the responsibility of the contractor to check the condition of the equipment being used. Defective equipment must not be used. The contractor must

inspect and certify that the borrowed equipment meets all federal, state and local safety and health standards before allowing its use by its employees. Gas detection or air monitoring instruments are to be provided and maintained by the contractor. Contractors are to make their own tests for their employees in confined spaces.

4.0 CONFINED SPACES

- 4.1 A confined space is a space which is large enough and so configured that an employee can bodily enter and perform assigned work, but which has limited or restricted means for entry and exit, and is not designed for continuous employee occupancy. Before entering any vault, manhole, boiler, tank, pipeline, silo, transformer, or other such confined space, Contractors must review with all of the affected employee's established Frog Switch plant, department confined space entry, and permit procedures. (A sample Checklist and Confined Space Permit is attached at the end of this document.) Before entering the space, through the designated Frog Switch representative, the Contractor must obtain entry approval and the necessary permits. Confined space entry must be in accordance with the OSHA confined space entry standard, 29 CFR 1910.146.
- 4.2 Contractor employees must not enter any pre-existing (i.e., not created by their own work) confined space without first determining if the confined space is a permit-required confined space. Permit space entry is allowed only if the contractor has a permit space program satisfying all requirements of OSHA 29 CFR 1910.146. Contractor must conduct own air monitoring prior to entering and provide continuous monitoring during the job for a minimum of 1) Oxygen deficiency, 2) CO and 3) flammable gases. Additional monitoring may be necessary to determine other gases or chemical vapor exposures as required.
- 4.3 The designated Frog Switch representative is to appraise the contractor of any precautions or procedures implemented for protection of employees in or near permit spaces in which Contractor employees will be working.
- 4.4 Before entry into a permit-required confined space, the contractor must obtain from the designated Frog Switch representative any available information regarding the permit space hazards. The contractor must also obtain any available information regarding entry precautions and procedures that Frog Switch has implemented for the protection of employees entering the space.
- 4.5 If a contractor is required to enter a confined space they follow these steps:
 - a. Identify the confined space and identify all hazards related to it.
 - b. Report this information to the E.H.S. Director. The information will be reviewed and before the entry it will be verified in conjunction with our company personnel.
 - c. Contractors must adhere to our LOTO Program and Confined Space Entry Program for all entries.

5.0 CONSTRUCTION TRAILERS

Contractors are to comply with following:

- 5.1 Construction trailer sites are assigned by the designated Frog Switch representative.
- 5.2 Contractors are to post trailer fronts with their name and telephone number.
- 5.3 Trailers must be positioned so fire hydrants or other emergency installations, such as sprinkler shutoffs, fire standpipe connections, electrical switches, gas valves, etc., are not blocked and remain readily accessible at all times.
- 5.4 Trailers must be position so that emergency equipment has access.

- 5.5 Trailers must not be positioned inside buildings, or close to any gas line, electrical line, tower or other utility to avoid creating a fire exposure or emergency access problem.
- 5.6 Trailers must not be positioned in a way that they could cause an exposure problem to any Frog Switch structure.
- 5.7 Position trailers at least five feet apart, except trailers set contiguously to form a larger complex.
- 5.8 Position trailers at least ten feet from any flammable, combustible liquid storage tank area or dispensing facility.
- 5.9 Contractors must provide and maintain at least one portable fire extinguisher in each trailer at a highly visible, inside location.
- 5.10 Trailers used as offices, lunch rooms or change rooms must meet all applicable NFPA and OSHA life safety regulations, including two identified unobstructed exits, adequate wiring, etc.
- 5.11 Contractors must post emergency telephone numbers at all telephones and at each first-aid station.

6.0 CONTRACTOR TRAINING

Contractors are responsible for training their employees on the safety rules and safe work procedures that pertain to the contracted work. This includes any interaction between Frog Switch operations and their work. Training is to be ongoing throughout the life of the contract.

6.1 Safety, Health and Environment Orientation

Contractors must conduct a safety, health and environment orientation for each contract employee before beginning work. The orientation must include, at a minimum, all the following applicable elements of the contractor safety program:

- Contractor safety policy
- Contractor established safety, health and environment rules and procedures
- First-aid equipment locations and obtaining injury-illness treatment Reporting of injury, illness and non-injury incidents
- Personal protective equipment use requirements
- 2004 NFPA Electrical 70 E Standards
- Housekeeping plan and responsibilities
- Emergency evacuation procedures
- Substance abuse policy and program
- violence and harassment policy and program
- Pre-shift job briefing and safety contact
- Observation and coaching of at-risk behaviors or conditions
- Facility / department specific safety rules
- Hazard communication, hazardous chemicals list and Material Safety Data Sheets
- Gas hazards, gas checks, and gas safe work guidelines
- Fire prevention and protection
- Work-site specific hazards and safe work rules and practices
- Emergency response procedures in case of a release or spill
- Frog Switch Environmental Policy – Each facility should have an environmental orientation to cover site specific environmental requirements (including policy, significant environmental aspects, spill reporting, environmental operational control procedures etc.)

6.2 Toolbox Safety Meetings

Contractors are to conduct a pre-shift job briefing - safety meeting at the work site to discuss job related safety, safe-job procedures for the work to be conducted and to provide employees the opportunity to ask questions and offer suggestions for creating a safer worksite.

6.3 Safe Job Procedures

The Contractor must train employees on safe-job procedures for the work being conducted. The Contractor shall evaluate the need for written safe job procedures. The Contractor shall provide the designated Frog Switch representative a copy of these procedures before beginning the work if the work involves coordination with Frog Switch employees working at the site.

6.4 Specialized Training

The Contractor is to provide specialized training as required for specific work site hazards and required work permits. This may include, but is not limited to:

- Lockout ~Control of Hazardous Energy Sources
- Confined spaces entry
- Gas hazards
- Hot work permits for fire prevention
- Hot work permits for electrical work
- Electrical safe work practices
- Energized Electrical Work permits for electrical work (see Energized Permit 34.3)
- Electrical safe work practices and 2004 NFPA 70E
- Proper waste disposal procedures
- Excavations and trenching
- Fall Protection

7.0 CRANES and MOBILE EQUIPMENT

7.1 Contractor supervision must consult with the designated Frog Switch representative before assigning employees a job in which they are exposed to movement of Frog Switch cranes or mobile equipment.

7.2 Contractor supervision must obtain permission from the designated Frog Switch representative before their employees are permitted to board an overhead crane or enter a crane runway for any purpose.

7.2a All mobile crane activity on the facility shall be conducted by only State Certified Crane Operators

- 7.3 The Contractor shall provide necessary safety watch(s) for the protection of his employees and shall adhere to all rules, regulations and instructions of the local operation when the Contractor's employees are exposed to the movements of cranes and mobile equipment.
- 7.4 Permission to use a Frog Switch crane must be coordinated through the designated Frog Switch representative.
- 7.5 Without the specific authorization from the designated Frog Switch representative, under no circumstances may Contractor employees operate any Frog Switch overhead crane or mobile equipment, or walk on crane runways while overhead cranes are in operation.
- 7.6 Before operating a mobile crane, aerial work platform, or similar elevating or lifting equipment in an area where elevating equipment could potentially be struck by an overhead crane, such equipment use must be coordinated with the operating department through the designated Frog Switch representative.
- 7.7 Frog Switch crane operators will not make lifts for contractors unless instructed and authorized by the designated Frog Switch representative. It is the responsibility of the contractor to obtain authorization from the designated Frog Switch representative before requesting Frog Switch crane operators to make lifts. The designated Frog Switch representative will arrange with the operating department to make the lifts. The contractor is responsible for directing the lifts.
- 7.8 Contractors must provide certification that crane and mobile equipment operators were trained, evaluated, and determined qualified to safely operate such equipment. Contractors are to conduct periodic evaluations of crane and mobile equipment operator performance and provide refresher training as required.
- 7.9 Contractor employees are to visually inspect lifting equipment for defects and practice proper rigging techniques. Contractor employees are to use standard hand signals.
- 7.10 Upon completion of the work, the contractor must notify the designated Frog Switch representative.

8.0 ELECTRICAL HAZARDS

- 8.1 Use of Frog Switch electrical lines is at the contractor's sole risk. The contractor must inspect and certify that the system and all equipment, the contractor's or Frog Switch's, are equipped with all required safety and health devices.
- 8.2 Minimum electrical clearances between people or equipment and energized electrical lines and equipment must conform to applicable OSHA regulations and 2004 NFPA 70E regulations established plant practices. Working on or near Energized Electrical Equipment-Overhead Lines contractors must follow the OSHA Regulations and 2004 NFPA 70E Tables and use the Energized Electrical Work Permit (see Energized Permit 34.3). Consult the designated Frog Switch representative regarding all work around energized electrical lines and equipment. Consider electrical lines and equipment energized until isolated, tested, locked out and/or tagged out and grounded.
- 8.3 Mobile cranes, vehicles and equipment operating or capable of being elevated near energized electrical equipment or lines must be intentionally grounded with a 4/0 cable grounding set.

Permit only qualified employees trained in proper grounding techniques to attach or detach grounding sets. Employees working at ground or floor level near the point of grounding may not stand at the grounding point. Additional precautions, such as the use of barricades or insulation, may need to be taken to protect employees from hazardous ground potentials that develop outward from the grounding point.

- 8.4 The contractor must prepare written procedures (switching order) for the opening or closing of electrical switches or circuits, unless wholly owned and solely used by the contractor. Before performing the switching work, the contractor must provide the written procedure to the designated Frog Switch representative for review with the plant's electrical management. During switching, follow the switching procedure steps in the order written (step 1, 2, 3, etc.), and do not deviate from the order of steps.
- 8.5 The contractor shall equip any cord and plug-connected electric tool or equipment not supplied by premises wiring with a cord containing an equipment-grounding conductor connected to the tool frame and to a ground at the other end or be of the double insulated type. Additionally, the contractor must use ground fault circuit interrupters (GFCIs) with all cord and plug connected tools and equipment. Contractors must test cord and plug connected tools and equipment, cords and GFCIs before each use and inspect at least annually.
- 8.6 Contractors are responsible to ensure all employees working on or near energized electrical equipment are properly trained and meet the OSHA and 2004 NFPA70E requirements as "qualified persons". Contractors are to provide the appropriate insulating protective equipment and PPE for the task or job activity (see 2004 NFPA 70E Table 130.7(C) (10)). Contractors are to ensure that these employees perform the work in a safe manner and in accordance with established standards per OSHA, 2004 NFPA 70E and the Corporate Arc Flash Plan.

9.0 **ENERGY CONTROL PROGRAM –LOCKOUT**

- 9.1 Contractors are to comply with the requirements of the OSHA standard for the control of hazardous energy sources (Lockout) for the protection of their employees. Contractor employees shall not attempt to operate any Frog Switch equipment unless specifically authorized.
 - 9.1.1 Contractor employees must adhere to the requirements set forth under OSHA Standards. Where equipment must be de-energized to prevent inadvertent activation, the contractor must consult with Frog Switch representative on the appropriate lockout procedures. Contractor employees must not initiate energy reactivation or isolation of electrical, mechanical or stored energy systems without being qualified or consulting with Frog Switch representative and notifying affected employees. Contractor employees shall not turn on any utility or motor without permission. Contract employees, who may initiate lockout activities, must be provided with a standardized lock that contains at least the individual's name and company name. Locks and tags will be furnished to contractor employees by contractor companies.
 - 9.1.2 All Contractor employees involved are responsible for insuring the lockout procedures are followed. If there are any switches or operating devices that cannot be locked, or there is any doubt as to how to lock out a piece of equipment, contractor employees must contact their supervisor for assistance. Any contractor to perform lockout shall be certain, which valve or other energy isolating devices apply to the equipment being locked out. A Frog Switch representative is to be consulted if any questions on appropriate lockout exist.

Certain equipment may involve more than one energy source such as; kinetic, electric, radiation hydraulic, mechanical, chemical, thermal, and pneumatic, stored, steam and other potential energy. In such instances, all energy sources must be de-energized, brought to a zero mechanical state, and locked out. When performing lockout, contractor must give full consideration to and address in its written safety procedures the following;

- Identification of all sources of energy - both kinetic energy (energy in motion) and potential energy (stored energy) that must be neutralized.
- Neutralization of all energy since stored energy that hasn't been neutralized could set a machine part in motion.
- Isolation of electrical power by breaking the circuit. (In cases where a removable circuit breaker is involved, a qualified employee must trip and rack the breaker out of its cubicle.
- Employees performing work on de-energized equipment shall place their safety lock on apparatus provided to ensure the breaker cannot be re-installed.)
- Lowering of all suspended parts to lowest (rest) position whenever possible.
- Blocking of movable parts.
- Venting of air pressure from pneumatic lines.
- Draining or bleeding hydraulic lines.
- Releasing or blocking spring energy.
- Attachment of a lock to the main energy source that has been placed in the "off" position or main shutoff valve that has been closed. The safety lock must be locked in place and tested to be sure it is latched. This is done to ensure that other employees cannot remove the safety lock. If more locks are needed than what has been supplied, the employee must contact their supervisor.

9.1.3 Where there is more than one person locking out, a multiple lockout device must be used and each employee must attach their lock. In special cases, one lock may be used to lockout equipment for a crew. In such cases, however, a lock box or its equivalent must also be used

9.1.4 to assure that each crew member has control of the lockout system by attaching their personal lock. After the lockout has been completed, an attempt shall be made to start the equipment to ensure it has been deactivated.

Where equipment must be operated at intervals to complete the repair work, a written procedure should be established for removal and replacement of safety locks or provide for an equally safe alternative. There must be clear and positive communications between the persons removing the lock and operating the equipment and the persons at the equipment who may be aligning or performing other work in conjunction with the repair.

9.2 Contractors are to implement a hazardous energy control (lockout) program consisting of written energy control procedures, employee training and periodic inspection. Energy control measures to prevent the unexpected start up or release of stored energy, and that render machinery or equipment inoperable during servicing and maintenance work are to be taken. This applies to all forms of energy such as; kinetic, electric, radiation, hydraulic, mechanical, chemical, thermal, pneumatic, stored, steam and other potential energy. Sources must be de-energized, brought to a zero mechanical state, verified and locked out, when performing lockout by contractors or their sub-contractors.

- 9.3 Frog Switch and the contractor are to inform each other of their respective energy control programs. Contractor energy control procedures are to be at least as protective of Frog Switch employees as the procedures used by Frog Switch, ensure that Frog Switch employees are not placed at an increased risk, and that Frog Switch employees understand the contractors/subcontractor's energy control program and procedures.
- 9.4 If there are other steps needed to ensure the protectiveness of the contractor's procedures, the designated Frog Switch representative will provide the contractor with adequate support and information. If any of the steps of the contractor's / subcontractor's procedures fail to cover significant or essential conditions of the workplace which could adversely affect the safety of Frog Switch employees, the Frog Switch designated representative will take action to minimize the potential for injury to Frog Switch employees.
- 9.5 Contractors may not make any connection to electrical, gas, steam, air, oxygen, nitrogen, acid, water, hydraulic, sewer, or process line unless authorized by the designated Frog Switch representative. No discharges are to be made to the sewer without authorization of the Frog Switch Environmental Management Department.

10.0 ENVIRONMENTAL MANAGEMENT

- 10.1 It is the contractor's responsibility to be aware of all standard procedures related to environmental management in the area in which work is being conducted and to follow those procedures.
- 10.2 The contractor representative should communicate to the designated Frog Switch representative any potential impact that the work being performed may have on the environmental aspects of the facility, and any new aspects that should be evaluated as a result of the work being performed. The contractor should specify the method by which the environmental aspect related to the work being performed will be managed in order to minimize the impact.
- 10.3 The designated Frog Switch representative should identify and communicate relevant procedures and requirements related to identified environmental aspects to contractors and suppliers.
- 10.4 The contractor must comply with all applicable Federal, state, county and municipal laws, regulations, codes, and ordinances, and any other applicable environmental legal requirements and standards ("Environmental Laws"). The contractor must comply with all applicable requirements or standard provided in the Facility's permits, approvals, registrations, licenses or certifications, and any modifications or renewals thereof. including but not limited to any applicable National Pollutant Discharge Elimination System permit, hazardous, solid or residual waste facility permit, air source operating permit, permit to install, construction permit, building permit or other permits and licenses of a temporary nature, that are or become applicable, required or necessary for the performance of the work. and submit an plans or reports required under any federal, state or local law or regulation. The contract must not conduct the work in such a manner as to cause a public or private nuisance.
- 10.5 Hazardous Chemicals/Substances and Materials/Material Safety Data Sheets
- 10.5.1 The contractor shall be responsible for familiarizing itself, its employees and its subcontractors with the rules contained in Section 17 "Hazardous Substances" and shall be responsible for ensuring that its employees and subcontractors follow such rules.

- 10.5.2 All hazardous chemicals, substances, or materials that the contractor or any of its subcontractors desires to bring into the facility must be approved for use within the facility by the facility Environmental Management Department. Material Safety Data Sheets must be maintained by the contractor at its work area for all hazardous chemicals it has brought into the facility and by each subcontractor at its work area for all hazardous chemical it has brought into the facility. Material Safety Data Sheets must be provided to the facility Environmental Management Department.
- 10.5.3 All trial hazardous chemicals or hazardous chemicals furnished without cost that are brought into the facility by the contractor or any of its subcontractors for use by Frog Switch personnel must be accompanied by a "no charge" purchase order obtained from the Purchasing Department. These chemicals must be approved for use within the facility by the facility Environmental Department.
- 10.5.4 Any hazardous material-related label or sign at the facility that is removed or defaced by the contractor or any of its subcontractors must be promptly replaced by the contractor.
- 10.6 Waste Water Discharges
- 10.6.1 No process wastewater, non-contact cooling water, storm water or sanitary wastewater may be discharged or disposed of by the contractor or any of its subcontractors into the site industrial wastewater, non-contact cooling water, storm water, sanitary wastewater systems, or any other water systems without the prior written approval of the facility Environmental Department.
- 10.6.2 No process wastewater, non-contact cooling water, storm water or sanitary wastewater may be discharged by the contractor or any of its subcontractors into any manholes within the facility without the prior written approval of the facility Environmental Department.
- 10.6.3 No materials, whether or not hazardous, may be discharged or disposed of by the contractor or any of its subcontractors into the facility's industrial wastewater, non-contact cooling water, storm water, or sanitary wastewater systems, other systems, or into any manholes.
- 10.7 Spills and Releases
- 10.7.1 Any spills or releases by the contractor or any of its subcontractors of hazardous materials, including, without limitation, any substance containing hazardous materials substances hazardous waste, pollutants or contaminants, or spills of other materials or substances that pose or could pose a threat to human health or the environment must be immediately reported to the appropriate facility person and to the Frog Switch Environmental representative.
- 10.7.2 In the event of a spill or release, steps must immediately be taken to stop and contain the spill in a safe manner. In particular, steps must be taken to prevent the spilled material from entering waterways or storm water, sanitary sewer or other manholes. Steps also must be taken to prevent spilled material from contacting personnel involved in trying to contain the spill.

- 10.7.3 Materials (e.g., oils and chemicals) must be stored in a manner that prevents spillage. Materials must be stored within secondary containment and away from storm drains.
- 10.7.4 All spills and releases within the facility caused by the contractor or any of its subcontractor's will be cleaned up by the Facility, its designee or, at the facility's discretion, by the contractor or subcontractor. The contractor shall reimburse Frog Switch for all costs incurred by Frog Switch in responding to and cleaning up any such spill or release, including all documentation and analytical cost required for clean closure. All costs associated with any clean up performed by the contractor or subcontractor will be borne by the contractor and shall be performed to the facility's satisfaction. If the facility directs the contractor to complete the clean up activities, the contractor complete all clean up and disposal of the spill material and/or residues in accordance with all applicable federal and state requirements and will restore the affected area to its original condition (or acceptable alternative approved by the facility).

10.8 PCB's

The following requirements are applicable to substations containing PCB transformers:

- 10.8.1 Any PCB-related label or sign at the facility that is removed by the contractor or any of its subcontractors must be promptly replaced by the contractor.
- 10.8.2 Combustibles must not be stored within five (5) meters (approximately 15 feet) of any PCB transformer.
- 10.8.3 Employees whose job functions do not require them to be in substations containing PCB transformers must not enter the substations. Substations must not be used as walkways, break/lunch rooms or workshops.
- 10.8.4 The entrance doors to substations containing PCB transformers must remain closed at all times.
- 10.8.5 Leaks or spills of transformer fluid of which the contractor or any of its subcontractors is aware must be immediately reported to the facility at extension to be provided by the facility. No attempt to clean up the fluid must be made and steps must be taken to ensure that the fluid does not contact personnel. In addition, for the PCB capacitors in service at the facility, any fluid or liquid leaking from capacitors or electrical equipment of which the contractor or any of its subcontractors is aware must be immediately reported to the facility at extension to be provided by the facility-. No attempt to clean-up the fluid must be made and steps must be taken to ensure that the fluid does not contact personnel.

10.9 Solid Waste

- 10.9.1 The contractor is responsible for the proper handling of all solid waste materials generated by the contractor or any of its subcontractors. Frog Switch will direct where offsite the materials are disposed of.
- 10.9.2 No waste materials associated with the work performed by contractors or subcontractors, including, but not limited to, construction, demolition, and excavation materials, may be disposed of by the contractor or any of its subcontractors without the prior written approval of the facility's Environmental Department.

- 10.9.3 No materials, including, without limitation, trash, may be brought into the Facility for disposal and/or recycling! Many items that can legally be disposed of as household trash cannot be disposed of in a similar manner by Frog Switch.

10.10 Asbestos

Any material that could possibly be asbestos or any material that could possibly contain asbestos (ACM) must not be disturbed. The facility Environment department must be contacted at extension to be provided by the site to arrange for the sampling and testing of suspect materials identified by the contractor. Materials determined to be asbestos or ACM must be removed by a licensed asbestos abatement contractor as approved by the Frog Switch Environmental department. If more than one hundred sixty (160) square feet or thirty-five (35) cubic feet of asbestos or ACM or more than two hundred sixty (260) linear feet of asbestos or ACM pipe insulation are to be removed, a 10-day notification/waiting period is required before the start of the asbestos abatement, which could affect the contractor's work schedule.

10.11 Vehicle Traffic and Parking

- 10.11.1 All vehicle traffic must be limited to paved road surfaces and approved unpaved roadways approved by the facility for use.
- 10.11.2 Traffic barricades must be used and maintained to prevent vehicle traffic from traveling through areas and on roadways not approved by the facility for use.
- 10.11.3 Vehicles hauling materials within the facility must be loaded in a manner that prevents spills during transport.
- 10.11.4 Vehicle parking must be limited to paved parking areas. If the contractor or any of its subcontractors desires to use an area for parking, such area may be used if approval is given by the facility and the contractor or its subcontractor desiring to use the area paves the area.
- 10.11.5 The installation of temporary or new permanent roadways and parking areas must be in accordance with facility standards and must be coordinated through the facilities Engineering Department. A written request must be submitted to the facility general manager's office to secure assistance from the facilities Engineering Department.

10.12 Open Burning

The open burning of any materials is not permitted. This applies to all areas including the rubble pits.

10.13 Environmental Management System (EMS)

Frog Switch facilities have developed facility Environmental Management Systems (EMS). The EMS standard requires that all persons working for or on behalf of the organization that works in the plant be provided environmental awareness training. The site specific environmental orientation includes;

- Environmental Policy
- Facility Significant aspects
- Facility spilt response and reporting responsibility
- Facility Emergency contacts

Contractors are responsible for being aware of the environmental policy posted throughout the facility. The Frog Switch representative is responsible for informing the contractors of the significant environmental aspect(s) in the work area, if applicable. Contractors are responsible for following procedures where they apply and manage environmental issues as outlined in this manual.

11.0 EXCAVATIONS AND TRENCHING

- 11.1 To prevent personal injury, contractors are to protect and effectively guard excavations by guardrail systems, covering, fencing and barricades or by such combination as may be necessary. Protection must be visible both day and night. Walkways, ramps, and bridges provided to permit employees to cross over excavations and trenching, require standard guardrails. The crossing will be made of tightly secured uniform planking.
- 11.2 Contractors are to protect each employee in an excavation from cave-in by an adequate protection system. Protective systems must have the capacity to resist all loads intended for the system or reasonably expected applied or transmitted to the system. Select and construct protective systems according to applicable OSHA standards. The contractor's competent person must construct sloping and benching. The contractor must provide ladders, steps, ramps or other safe means of access and egress at intervals of 25 feet in trenching 4 feet or more in depth. Secure and extend ladders 3 feet above ground level.
- 11.3 Excavations, trenching and adjacent areas must be inspected by the contractor's competent person after every rainfall, as soil conditions change, at the start of and as needed throughout each work shift. If there is evidence of hazardous conditions, the contractor must take the necessary safety precautions before any additional work in that section of the excavation begins.
- 11.4 Before excavating, contractors must obtain from the designated Frog Switch representative information on the location of pipelines, conduits, cables, etc., known or suspected to be within or near the excavation site, and any work permit requirements. A digging permit must be completed and signed by the contractor performing the work. A copy of the permit must be kept at the job site for the duration of the job. (A sample permit is attached at the end of this document).
- 11.5 Contractors are to cease and promptly report to the designated Frog Switch representative any pipeline, conduit, cable, warning tape or material unexpectedly uncovered while excavating, trenching, grading or dismantling. The work must not resume until the designated Frog Switch representative determines such work may safely continue.

12.0 EXPLOSIVES

- 12.1 The use of explosives requires prior authorization from the designated Frog Switch representative. Contractors must notify the designated representative of each intention to blast. No explosives are to be brought on Frog Switch property without authorization from the designated Frog Switch representative.
- 12.2 Handle, store, transport and fire explosives in accordance with local, state and federal regulations and the recommendations of the explosive manufacturers.
- 12.3 Only blast under the direction of a trained, qualified, and currently licensed blaster.
- 12.4 All blasting materials must be counted and accounted for each day. AU explosives must be under control of the blaster or locked up while on the job and removed at the end of each day.

13.0 EXPLOSIVE -ACTUATED TOOLS

- 13.1 The use of explosive-actuated tools requires the prior authorization of the designated Frog Switch representative. Use explosive-actuated tools in accordance with OSHA and established safe work practices. Before using an explosive-actuated tool, the contractor operator must inspect the tool to determine that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions. Any tool found not in proper working order or that develops a defect during use must be tagged as defective and removed from service by the contractor until properly repaired. Use only indirect acting explosive-actuated tools.
- 13.2 The contractor must employ only trained, qualified employees to operate an explosive actuated tool. Adequate eye, ear, head, face and/or any other personal protective equipment as necessitated by working conditions must be used by the tool operator as well as other persons in the immediate area.

14.0 FIRE PREVENTION AND FIRE PROTECTION

- 14.1 Before beginning the contracted work, contractors must familiarize themselves with site fire protection facilities including the availability and operation of portable fire extinguisher and established procedures for reporting a fire and summoning emergency assistance. A HOT WORK PERMIT may be required depending on the work, location and local site requirements. A sample HOT WORK PERMIT FORM is attached at the end of this document. Local requirements may utilize a different form. Contractors must inquire about this form to ensure they follow all of the local standards.
- 14.2 Contractors are responsible for providing sufficient, appropriate, conspicuously located portable fire extinguisher in the work area. Contractors are responsible for the immediate replacement of any used extinguisher. Standpipe hose connections and hydrants are to be readily accessible and immediately available in case of fire. Maintain a minimum clearance of 15 feet on the street or roadway side and 5 feet on all other sides around all hydrants.
- 14.3 Contractors are to implement fire prevention measures to protect all employees, equipment and buildings in the work area and on all job sites.
- 14.4 Standpipe hose connections and hydrants must not be impaired. Standpipes and hydrants must not be used as water supplies for purposes other than fire fighting. The designated Frog Switch representative must obtain specific permission from the plant fire safety representative, before contractors can use standpipes or hydrants for purposes other than fire fighting.
- 14.5 Contractor employees must obey all signs and rules regarding smoking, sparks and open flames. Smoking is limited to designated areas only and not permitted inside facility buildings.
- 14.6 In event of fire, contractors are to follow established plant procedures to summon emergency assistance. The designated Frog Switch USA representative is to explain the plant's procedures for summoning emergency assistance before the contracted work begins. Until arrival of emergency assistance, Contractors are to do what they SAFELY can do to control the fire during the initial or incipient stage. Contractors are to report every fire to the designated Frog Switch representative, investigate and determine the fire's cause and implement actions necessary to prevent recurrence.

- 14.7 Before the contractor is permitted to use electric, gas or oil-fired heaters and other similar heating equipment, the designated Frog Switch representative must obtain approval from the plant Frog Switch representative or fire safety representative to use this equipment. Open fires are prohibited.
- 14.8 Before the contractor installs tarpaulins in buildings for wall breaks, isolation or covering purposes, the designated Frog Switch representative must obtain approval from the plant Frog Switch representative or the facility fire safety representative on the type of tarpaulin and location of installation.
- 14.9 Use spark proof tools for work in areas of fire and / or explosion hazards.
- 14.10 A designated fire watch must remain in the hot work area 60 minutes following the completion of the hot work, or interruption of the hot work in order to ensure there are no smoldering or rekindling fires as required. The fire watch must be alert to changes in conditions that may increase the potential for fire.

15.0 FLAMMABLE AND COMBUSTIBLE HAZARDS

- 15.1 Because potential hazards of flammable and combustible materials are quite diverse, there is no one set of recommendations covering all situations and conditions. Contractors are to consult, through the designated Frog Switch representative, with the plant fire safety representative to ensure compliance with all applicable federal, state, local, plant and department fire safety codes.
- 15.2 General guidelines Contractors are to observe for storing flammable or combustible materials are as follows:
- 15.2.1 Paint, solvent and other flammable or combustible materials must be stored in an area building, cabinet, or metal container approved by the designated Frog Switch representative.
 - 15.2.2 Smoking is strictly prohibited in bulk storage areas or when handling flammable materials, Post "No Smoking" signs at the perimeter of all flammable - combustible material storage locations.
 - 15.2.3 Electrical equipment and installations in flammable material storage locations must conform to the provisions National Electric Code and 2004 NFPA 70E.
 - 15.2.4 Materials that may be hazardous in combination with each other must be stored so they cannot come in contact.
 - 15.2.5 Store as low in height as possible
 - 15.2.6 Storage areas should have adequate lighting and be kept free of unnecessary combustible materials
 - 15.2.7 Salamanders, portable heaters or other open flames are not to be used in flammable/ combustible material storage areas.

- 15.2.8 Maintain the quantity of flammable liquids at the work site to the quantity necessary for immediate use or application. Bulk quantities must be stored in an approved storage location that meets NFPA standards.
- 15.3 Flammable liquids must be handled in Factory Mutual or Underwriters Laboratories (FM-UL) approved safety cans, containers or portable vented tanks, which the designated Frog Switch representative has had approved by the plant fire safety representative. Flammable liquids must be stored in locations acceptable to the department of the contracted work,
- 15.4 Ground in-service flammable liquid containers and portable tanks. When transferring flammable liquids from one container to another, bond the two containers before pouring, Clearly label all containers of flammable liquids as to their contents and hazards.

16.0 **GAS HAZARDS**

- 16.1 Contractor employees working in proximity to a known or potential gas hazards environment need to be knowledgeable of the gas hazards and the safe work practices for the area, and be equipped with calibrated detection equipment.
- 16.2 Purging will be determined by the facility/department. The contractor must ascertain from the designated Frog Switch representative whether a pipe line has been or requires purging before beginning work. The contractor is responsible for monitoring that the purge is maintained for the duration of the work or job. Contractors must receive authorization from the designated Frog Switch representative to open or close gas valves.
- 16.3 Contractors must select and provide appropriate respiratory protection and gas detection equipment for their employees use during the performance of all jobs and work requiring gas detection equipment . Contractors must provide and use only NIOSH certified respiratory protection equipment. Contractor provided detection equipment must be approved for use by the plant before the start of work.
- 16.4 Contractor supervision must be knowledgeable of the safe use procedures and limitations of the respiratory protection and gas detection equipment provided and ensure that equipment use is in accordance with all recommended procedures and operating instructions.
- 16.5 Contractors must select for work requiring use of respiratory protection and gas detection equipment only employees currently evaluated and trained in the safe use of this equipment. Contractor employees need to know how to use the detection equipment provided, how to monitor the work site, how to respond to an alarm condition, who to inform of the alarm condition and when they may resume work.
- 16.6 Contractors must have written certification from a physician or other licensed health care professional that employees required to wear respiratory protection equipment have been medically evaluated and are capable of using such equipment without medical restrictions. Certification must be obtained by the contractor before fit testing and initial training and assignment of the employee to work requiring respiratory protection and at least annually thereafter, unless circumstances require more frequent certification.
- 16.7 Contractor employees before beginning to work in known or potential gas hazard areas requiring use of respiratory protection and gas equipment, require training on established Frog Switch, plant or department safe work practices for working in a known or potential gas hazard area.

- 16.8 Contractor employees working in a known or potential gas hazard or oxygen-deficient area are to use gas or oxygen detection equipment. Contractors must ensure that necessary gas checks are conducted and that Contractor employees inform the Frog Switch department supervision before entering and after leaving the area. Contractor employees are to observe all applicable regulatory requirements for working in a known or potential gas hazard or oxygen deficient area.
- 16.9 Before entering any vault, manhole, boiler, tank, pipeline, silo, transformer, or other such confined space, contractors must review with all the affected employees established Frog Switch /plant/department confined space entry and permit procedures. Before entering the space, through the designated Frog Switch representative, the contractor must obtain entry approval and the necessary permits. Confined space entry must be in accordance with the OSHA confined space entry standard, 29 CFR 1910.146.
- 16.10 Only approved explosion-proof electrical equipment and spark-proof tools in flammable vapor/gas areas are permitted.
- 16.11 Contractors using internal combustion engine driven equipment inside of closed area must vent/pipe engine exhaust outdoors. Contractors are responsible for monitoring and maintaining carbon monoxide levels inside the enclosed area or building below permissible exposure limits.

17.0 HAZARDOUS SUBSTANCES AND HAZARDOUS WASTE

- 17.1 The storage, transportation, use and disposal of hazardous substances and hazardous wastes must be in compliance with all Environmental Laws, Frog Switch regulations, and other applicable requirements (including the requirements of any applicable permits, licenses, registrations, certifications or other approvals) and the recommendations of the manufacturer as outlined in the Material Safety Data Sheet for the product. The contractor may not treat, store, or dispose of hazardous wastes or hazardous substances on the premises; however, the contractor may store such wastes and substances temporarily in approved tanks or containers in accordance with all Environmental Laws and with the approval of the designated Frog Switch representative.
- 17.2 Before beginning work, contractors, must provide to the designated Frog Switch representative a list of all potentially hazardous substances to be brought on-site, their quantities and a current MSDS for each substance. Contractors are required to update the hazardous substance list and provide a MSDS as new hazardous substances are brought on-site.
- 17.3 The contractor must make MSDS's for on-site hazardous substances readily available to employees during their work shift. Updated MSDS's must be made available to contractor employees and the designated Frog Switch representative.
- 17.4 The Contractor must ensure that each work site hazardous substance container is labeled, tagged or marked in accordance with hazard communication, right-to-know, or other regulations. Labeling must identify container content, appropriate hazard warnings, and the name and address of the manufacturer or other responsible contact person.
- 17.5 Contractors are responsible For removing any unused hazardous substance from the work site as work progresses and for removing all hazardous substances upon job completion.
- 17.6 Contractors encountering material suspected of containing asbestos must presume that such material contains asbestos and treat it as such. Work is to immediately stop and the designated Frog Switch representative must be notified.

18.0 HORSEPLAY

18.1 Contractor employees must not engage in horseplay, practical jokes, or athletic activities of any kind while on the work site or on Frog Switch property.

19.0 HOUSEKEEPING

19.1 The contractor is responsible for work site housekeeping and cleanliness. At all times, the Contractor is to maintain the work site in a condition as clean and safe as practical and free of refuse and rubbish. In performing the contracted work, the contractor takes title to the non-hazardous waste generated and responsibility for its clean up and disposal in compliance with all applicable laws and regulations.

19.2 Contractors/subcontractor must keep aisles, exits, stairs, catwalks and roadways clear and open.

19.3 Locate and pile materials in such a way as not to create a hazard to persons or equipment or interfere with the operation of fire protection equipment. Floor loading limits must not be exceeded.

19.4 Precautions must be taken to prevent tripping hazards from hoses, Yielding leads, electrode stubs, water lines, tools, small material, etc.

19.5 The contractor must dispose of all solid/liquid waste material in accordance with any instructions provided by a representative of the Environment Department. In no case is trash to be disposed of by open-fire burning.

20.0 LASERS

20.1 Use of laser sources are governed by all applicable federal, state and local regulations

20.2 Contractor use of lasers requires approval of the plant safety manager or representative.

21.0 MEDICAL / EMERGENCY RESPONSE / EVACUATION

21.1 Contractors must arrange for the treatment of employees injured or who become ill on the work site and provide as required, adequate first aid supplies, suitable facilities for quick drenching or flushing of eyes or body, and employee medical surveillance. Evacuation routes and methods for accounting for all personnel must be arranged for at each job site.

21.2 Contractors are responsible for ensuring that employees are medically evaluated and determined fit before assigning to job positions or work activities requiring prior medical surveillance.

22.0 MOBILE EQUIPMENT GROUNDING

A potential electrical hazard exists when mobile and elevating equipment is operated within limited Approach boundary of unguarded conductors or equipment or to parts that have the potential for becoming energized (2004 NFPA 70E Table 130.2 (C). Contractors must make a connection between the equipment and the best ground available in the immediate work area with 4/0 grounding set. Attach the grounding set to ground source first, then equipment. When removing ground set, detach ground set from equipment first, then from ground source. Stretch out ground set fully.

- 22.1 Rod or Pipe Electrode Rules: Rod and pipe electrodes must not be less than 8 feet in length and must consist of the following materials and must be installed in the following manner:
- 22.1.1 Pipe or conduit electrodes must be not Smaller than 3/4-inch trade size and if made of iron or steel, must have the outer surface galvanized or otherwise metal coated for corrosion protection.
 - 22.1.2 Steel or iron electrodes must be at least 5/8 inch in diameter. Nonferrous rods or their equivalent must be listed and must be not less 1/2 inch in diameter.
 - 21.1.3 Install electrodes to a depth of not less than feet in Soil. Where rock is encountered, drive electrodes at an oblique angle not to exceed 45 degrees from the vertical or bury in a trench that is at least 2-1/2 feet deep. The upper end of the electrode must be flush with or below ground level unless the aboveground end and the grounding lead attachment are protected against physical carnage.
- 22.2 Building or Structural Grounding: When a building or structural ground is used as a grounding Source, the connection must be made in a manner that

23.0 OVERHEAD WORK-FALL PROTECTION

- 23.1 Contractors are to provide fall hazard protection wherever an employee is four feet or more above a lower level and wherever there is a potential hazard of an employee falling into dangerous equipment, regardless of the height.
- 23.2 Contractors are to assess the work site and select and provide fall protection measures compatible with the work performed. Fall protection generally can be provided through use of guardrail systems, safety nets, and personal fall arrest systems, positioning systems, warning lines and controlled access zones.
- 23.3 Guardrail systems must meet OSHA requirements for guardrail systems.
- 23.4 Personal fall arrest systems require the use of a body harness, lanyard with a deceleration device and anchorage capable of supporting at least 5,000 pounds of force per attached employee. Snap hooks must be a locking type or sized compatible with the member to which connected to prevent disengagement. The contractor must rig personal fall arrest system so that an employee can neither free fall more than six feet nor contact a lower level.
- 23.5 Fall arrest anchorages must be selected by the contractor qualified personal and be independent of any anchorage used to support or suspend platforms.
- 23.6 The design and installation of horizontal lifelines must be under the supervision of the contractor's qualified person.
- 23.7 Before each use the contractor must inspect personal fall arrest systems for damage and deterioration; and tag and remove defective components from service.
- 23.8 The contractor must securely tie or brace portable ladders to prevent accidental slipping or falling.

- 23.9 The contractor must rope off and post areas beneath overhead work with signs reading: "Danger Employees Working Above" or "Danger -- Falling Material" to keep employees on the ground/floor clear of overhead work.
- 23.10 Lower equipment and materials to ground level by hand line or some other control method. Do not drop or throw any materials.
- 23.11 Contractors must designate a trained, competent person to oversee scaffold erection, dismantling and use. Contractors must train each employee involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting a scaffold to recognize any hazards associated with the work.
- 23.12 The contractor must inspect scaffolding each work shift and after any event that could affect the structural integrity of the scaffold.
- 23.13 Contractors must train each employee who performs work from a scaffold to recognize the hazards associated with the scaffolding used and how to control or minimize those hazards.
- 23.14 Only trained, authorized employees are to operate aerial lifts. Employees are to stand firmly on the floor of the lift and not climb out of the elevated basket. If employees are required to enter or exit the basket, a written authorization is to be signed off by the contractor and Frog Switch representative and only after complete fall protection is achieved. Employees are to secure themselves to the boom or basket with a body harness and lanyard at all times while in the basket.
- 23.15 Before initially going on any plant roof, tank or vessel roof, Frog Switch representative must be contacted. The contractor must assess the condition of the roof prior to performing work and must evaluate potential exposure to electrical utilities. Certain roofs, i.e. transit, resolute and galbestos, present special hazards due to their inability to bear weight. The contractor must initiate additional safety practices when structural weaknesses are suspected regardless of the materials of construction. Safety harnesses and fall protection systems must be worn while on any roof within the facility unless an adequate safety plan has been developed and approved in writing. No material shall be thrown or dropped from plant roofs unless permission has been granted. When working overhead, the area below shall be roped off or other equivalent measures.

24.0 PERSONAL PROTECTIVE EQUIPMENT

- 24.1 Contractors must ensure personal protective equipment (PPE) and clothing is provided, used, and maintained by their employees whenever necessary because of work, job or site hazards. Contractors are to comply with any established plant or department protective equipment specific use requirements. PPE must be of safe design and constructed for the work performed.
- 24.2 Contractor employees are responsible for inspecting their PPE before each use. Do not use defective or damaged PPE. Do not alter PPE.
- 24.3 Contractors are responsible for training their employees; when PPE is necessary; what type; how it is worn, its limitations; proper care and disposal.
- 24.4 Wear safety hard hats of a non-conductive material at all times.

- 24.5 Wear foot protection at all times. As a minimum, a suitable work shoe is required; sneakers are not permitted.
- 24.6 Safety glasses with side shields as a minimum must be worn at all times. Additional suitable eye – face protectors must be worn as required by work-site or job activity hazards.
- 24.7 Persons who use corrective spectacles and are required to wear eye protection must wear either safety glasses with protective lenses providing optical correction or goggles over corrective glasses. Normal street wear frames and safety lenses are not in compliance.
- 24.8 Contractor must medically evaluate, train and fit test employees performing work requiring respiratory protective equipment before providing respiratory protection equipment. Contractor employees required to wear respirators are not permitted to work in respirator required areas if they have facial hair between the face and the face-piece sealing area in excess of one-day growth or that interferes with valve function.
- 24.9 Contractor employees required to wear respirators must perform a user's seal check each time a respirator is worn.
- 24.10 Contractors may provide respiratory protection to employees requesting its use after determining that such use will not create a hazard or the employee does not have a medical restriction. Where respirator use is voluntary, Contractors are to provide employees with the information in Appendix D of OSHA respiratory protection standard, 29 CFR 1910.134.
- 24.11 Work clothing consisting of long pants and waist length shirts with long sleeves is to be worn on the work site as a minimum. Flame-retardant work clothing must be worn when there is potential for exposure to flame or arc. Primary protection must be worn whenever there is potential for exposure to molten iron or metal.
- 24.12 Jewelry has been the cause of serious injuries such as dismemberment, burns and electric shock. Whenever the wearing of personal protective equipment is required in the facility, finger rings, dangle earrings, necklaces and bracelets shall not be worn. Jewelry can catch on machinery, equipment and protruding objects, or come in contact with electrical equipment and cause serious injury.

25.0 PIPELINES

- 25.1 The contractor must treat work performed on or near pipelines as though the pipelines are carrying hazardous substances until determined otherwise.
- 25.2 Valves, other than those belonging to the contractor, must not be opened or closed without permission from the designated Frog Switch representative. Any valve closed by the contractor, with permission from the designated representative, must be locked and tagged if required by established lockout procedures.

26.0 PNEUMATIC TOOLS AND LINES

- 26.1 Use of Frog Switch compressed air lines is at the contractors sole risk. The contractor must inspect and certify that the system, and all equipment, regardless of ownership, is equipped with all required safety devices.

- 26.2 Attach air hoses only to compressed air lines. Compressed air must not be used for cleaning purposes, except where reduced to less than 30 psi and then only with use of effective personal protective equipment. Never direct compressed air towards another employee or use in horseplay. Oxygen is not a substitute for compressed air. Consult the designated Frog Switch representative if there is any question as to the contents of a line.
- 26.3 The designated Frog Switch representative must approve the location of contractor compressed air lines, as well as any tie to Frog Switch's systems. Compressed air lines, hoses and tools must be in proper condition and proper safety precautions must be taken in their use.
- 26.4 Temporary pipelines require labeling at each outlet.

27.0 RADIATION

- 27.1 Contractor use of X-ray equipment or radioactive material is to be governed by all applicable federal, state and local regulations and "Regulations Governing the Use of Ionizing Radiation," most recent edition, issued as a separate publication by the Safety and Health Department.
- 27.2 Contractors through the designated Frog Switch representative must clear the details of procedures with the plant radiation safety officer, sufficiently in advance so that all required precautions can be implemented.

28.0 SAFE WORK ENVIRONMENT

- 28.1 Contractors must not create an atmosphere, using internal combustion engines, toxic substances, or other unspecified methods, that could have an adverse health effect on any persons in the area. For example: vent internal combustion engines operating within an enclosed area to the outside.
- 28.2 Contractors must not create any other conditions that could cause injury or adverse health effect to any person. For example: when working overhead there must be adequate warning or protection for persons on the ground.

29.0 SAFETY MONITORING

Contractors are expected to strive for continuous improvement in safe job performance and safe work site conditions and practices.

- 29.1 Inspections
- 29.1.1 Due to an ever-changing work site, contractors must monitor the work site during each work shift for at-risk and potential at-risk conditions and practices, and if found, correct them immediately.
- 29.1.2 Tools and equipment must be inspected by the user before use. Contractors must immediately tag and remove from service faulty tools and equipment for repair or replacement.
- 29.1.3 Powered vehicles are to be inspected by the vehicle's operator daily or prior to the vehicle's use. Tag and remove from service any vehicle found in need of repair or in any way unsafe or contributing to an unsafe condition for repair, and not operate until restored to safe operating condition.

30.0 SEWERS

- 30.1 All sewer work requires a confined space entry permit or certification.
- 30.2 Contractors must protect open manholes or catch basins by an adequate barricade. Contractors must replace open manhole covers promptly when work is suspended, or provide adequate protection, including warning lights to guard the hazard.
- 30.3 Contractors must obtain approval from the facility Environmental Management Department before directing to or disposing of material in any facility sewer or drain.

31.0 VEHICULAR TRAFFIC

- 31.1 Contractor employees must observe established facility traffic rules, signs and speed limits at all times. Extreme care must be taken particularly at posted equipment crossings to safeguard pedestrians and equipment. Failure to do so may result in revocation of in-facility driving privileges. Contractors must park only in areas designated by the designated Frog Switch representative. Maintain emergency vehicle travel lanes at all times.
- 31.2 Always yield right of way to railroad trains, fixed rail equipment, coil carriers, slab carriers and all types of mobile equipment and vehicular traffic. Contractor vehicles and mobile equipment are to stop, look, and listen at all rail crossings.

32.0 WELDING AND BURNING

- 32.1 Hot Work
 - 32.1.1 Hot work is any job or activity that uses or produces flames, sparks or heat that could act as an ignition source for any flammable liquid, gas or combustible material in the work area.
 - 32.1.2 Before beginning hot work, the contractor must thoroughly inspect the hot work area for potential combustible hazards and obtain and complete a hot work permit.
 - 32.1.3 Based upon the completed hot work permit, the contractor must assign a trained, knowledgeable, properly equipped fire watch to ensure that all hot work precautions are followed and be alert for fires during the performance of the hot work. The contractor must ensure that operable fire extinguishers or a charged hose line is immediately available within the hot work area.
 - 32.1.4 When hot work is contemplated, the Contractor must give consideration to use of saws, bolts, bolt cutters, wrenches or other non-sparking tools instead of burning or welding equipment. In all situations where hot work is to be performed in hazardous areas such as coat bins, crusher buildings, acid storage, benzol yards, etc., special job plans must be developed by the Contractor and through the designated Frog Switch representative reviewed and approved by a department representative and the plant fire safety representative.
 - 32.1.5 When hot work is deemed necessary, the equipment on which the hot work is to be performed must, where possible, be removed from any potential fire hazard. If this is not possible, remove combustible storage or combustible deposits from the hot work area. Clear a 35 feet area surrounding the hot work of all combustible hazards. Use non-combustible covers or wet down to protect immovable combustibles.
 - 32.1.6 The contractor must include in all inspections for potential fire hazards opposite sides of walls, partitions, roofs and floors below. Contractors must block floor and wall openings to prevent hot material from entering the adjacent areas and seal ductwork or duct openings with metal covers.

- 32.1.7 Contractor supervision daily, before the start of any hot work, must through the designated Frog Switch representative contact supervision from the hot work area to insure that no abnormal or changed conditions exist.
- 32.1.8 Hot work must not be performed in areas protected by automatic fire protection systems until approved by the plant fire safety representative to ensure no fire hazard exists from activation of carbon dioxide, Halon or dry chemical extinguishing systems. The contractor must provide backup fire protection before the hot work begins and prepare a red tag permit for shutting down fire protection equipment. The contractor must not undertake hot work if the automatic fire protection system is shutoff, damaged, or frozen.
- 32.1.9 When hot work is performed above ground level; above machinery, pits or cellars; and where there is limited access for fire fighting equipment, the contractor must in advance regardless of hazard severity, notify the plant fire safety representative through the designated Frog Switch representative and assign a fire watch.
- 32.1.10 During the performance of hot work, the fire watch must be alert for the ignition of combustible materials within an area of 35 feet from where the hot work is being performed.
- 32.1.11 When a fire watch is necessary, the fire watch must be trained to operate the available fire extinguishing equipment and know the equipments limitations. The fire watch must know the location of telephones in the area, emergency assistance numbers to call, and procedures for summoning emergency assistance. The contractor is to immediately replace used extinguishers.
- 32.1.12 The designated fire watch must remain in the hot work area for a minimum of 60 minutes following the completion of the hot work, or interruption of the hot work in order to ensure there are no smoldering or rekindling fires as required. The fire watch must be alert to changes in conditions that may increase the potential for fire.
- 32.1.13 The contractor must, through the designated Frog Switch representative, notify the plant fire safety representative of the completion of all hot work.
- 32.2 Contractors are to limit the use of oxygen-fuel gas equipment to only trained and authorized employees. Oxygen-fuel gas equipment use must meet the standards of all applicable federal, State and local codes.
- 32.2.1 Oxygen-fuel gas systems must include proper backflow and flashback protection. Rubber hose must meet American Gas Association/Rubber Manufacturers Association specifications.
- 32.2.2 Contractor use, handling, storing and disposal of oxygen and fuel gas must be in accordance with established facility practices.
- 32.2.3 Contractors are requires to obtain the approval of the Frog Switch engineering group before burning holes into or welding onto any structural or building member.
- 32.3 Compressed Gas Cylinders Storage
- 32.3.1 Contractors must store cylinders erect and secured to a fixed object in well-protected, well-ventilated, dry locations, away from sources of heat (radiators, open flame, molten metal). Contractors must close valves on empty cylinders and replace valve protection caps.

- 32.3.2 Contractors must place cylinders where they cannot be struck by moving equipment; where materials cannot be dropped on them, and where they cannot become part of an electric circuit.
- 32.3.3 Contractors must keep Cylinders far enough away from any welding or cutting work activity so sparks, hot slag, or flame will not reach them; provide fire-resistant shields if needed.
- 32.3.4 Contractors must replace valve protection caps; hand tight, on cylinders not connected for use
- 32.3.5 Contractors must separate oxygen cylinders in storage from fuel-gas cylinders or combustible materials (especially oil or grease), by a minimum distance of twenty (20) feet or by a non-combustible barrier at least five (5) feet high having a fire resistance rating of at least one-half hour.
- 32.3.6 Contractors must ensure that compressed gas cylinders are legibly marked to identify content, by either the chemical or the trade name.
- 32.4 Compressed Gas Cylinder Handling
- 32.4.1 Contractors must move cylinders in a pushcart designed to firmly secure the cylinders to the cart in an upright position and the valves must be protected.
- 32.4.2 Contractors must secure cylinders on a cradle, sling board or special pallet for hoisting. Remove regulators and replace valve protection caps. Contractors must not use valve protection caps for lifting cylinders. Choker slings or electro-magnets are not to be used to transport cylinders.
- 32.4.3 Where a special wrench is required it must be left in position on the stem of the valve while the cylinder is in use. Contractors must not use cylinders as rollers or work supports.
- 32.4.4 Contractors must avoid handling oxygen cylinders or apparatus with oily hands, gloves, rags, or tools.
- 32.4.5 Contractors must secure cylinders transported by a powered vehicle in an upright position.
- 32.5 Electric Welding
- 32.5.1 Electric welding must be performed only by qualified welders in well-ventilated areas.
- 32.5.2 Contractor welders are to use required personal protective equipment.
- 32.5.3 Contractors must screen or shield welding arc from others in the same area.
- 32.5.4 Contractors must ground welding in a way that individuals or equipment does not become part of the ground circuit. Ground welding as close to the welding as possible. Electrical conduit or piping systems containing hazardous materials or gases may not be used as a welding ground.
- 32.5.5 Contractors must ground frames of electric welding machines.

33.0 WORKING ON OR NEAR ENERGIZED ELECTRICAL EQUIPMENT AND OVERHEAD LINES

Work on or near electrically energized installations, requires that the equipment and/or overhead lines be de-energized and grounds installed or that other protective measures taken before beginning the work. Contractors must be electrically qualified (per OSHA and NFPA 70E Standards) and follow established safe electrical work procedures established by the OSHA Standards and the Corporate Arc Flash Plan. Crews cannot de-energize electrical equipment, overhead lines or tow voltage feeders without obtaining through the designated Frog Switch representative permission from the plant's electrical management (A Hot Work Electrical Form is attached at the end of this document and must be used anytime Hot Work is performed).

Only qualified (Per OSHA and NFPA JOE Standards) employees may work on or near, or in an area where there are exposed energized parts operating at 50 volts or more with proper PPE (per OSHA and 2004 NFPA 70E Standards) and use the Energized Electrical Work Permit (see Energized 34.3). Consider electric lines and equipment as energized unless they have been de-energized, locked out or tagged out, and grounds installed.

33.1 Unqualified employees: Unqualified employees (those with little or no electrical training) may not work on or near, or in an area where there are exposed energized parts operating at 50 volts or more and must be in positions where no conductive object or equipment that they work on or can use can come closer to the unguarded energized electrical equipment or overhead line per the 2004 NFPA 70E Table 130.2 (C).

33.2 Qualified Employees: Qualified employees (Per OSHA and NFPA 70E Standards) working on or in the vicinity of unguarded, energized equipment or overhead lines, may not approach or touch any conductive object without an approved insulating handle closer to exposed energized parts than the distanced shown in 2004 NFPA 70E Table 130.2 (C).

34.0 SITE SPECIFIC EMERGENCY CONTACTS

This document references facility safety and environmental contacts, each contractor should add emergency contact information, for Frog Switch Manufacturing it is available below.

For all emergencies please contact: Daniel M. Gibbs 717-226-9023 (24hrs)
For all medical emergencies please contact 911 then contact Daniel M. Gibbs

**Plant EMERGENCY
INFORMATION FORM***

Plant Information

Location: The Frog, Switch & Manufacturing Company, Carlisle, PA 17013

Phone: Daniel M. Gibbs 717-226-9023 (24HRS)

Street Address: 600 East High Street

District: Carlisle Borough Number of Employees Assigned: 35

E-mail: dgibbs@frogswitch.com

Contact Person(s): Mr. Daniel Gibbs E.H.S. Director.

Emergency Reporting Numbers

Local Police: 717-243-5252 County Police:

Fire: 911 __ State Police: 717-249-2121

Medical: 911 HAZMAT Response No.: 717-651-2001

Local Emergency Management Contact: Cumberland County Office of Emergency

Preparedness: 717-240-6400

Local Utility Contact Information

Water Company: **Carlisle Borough 717-249-4422 follow voice prompts**

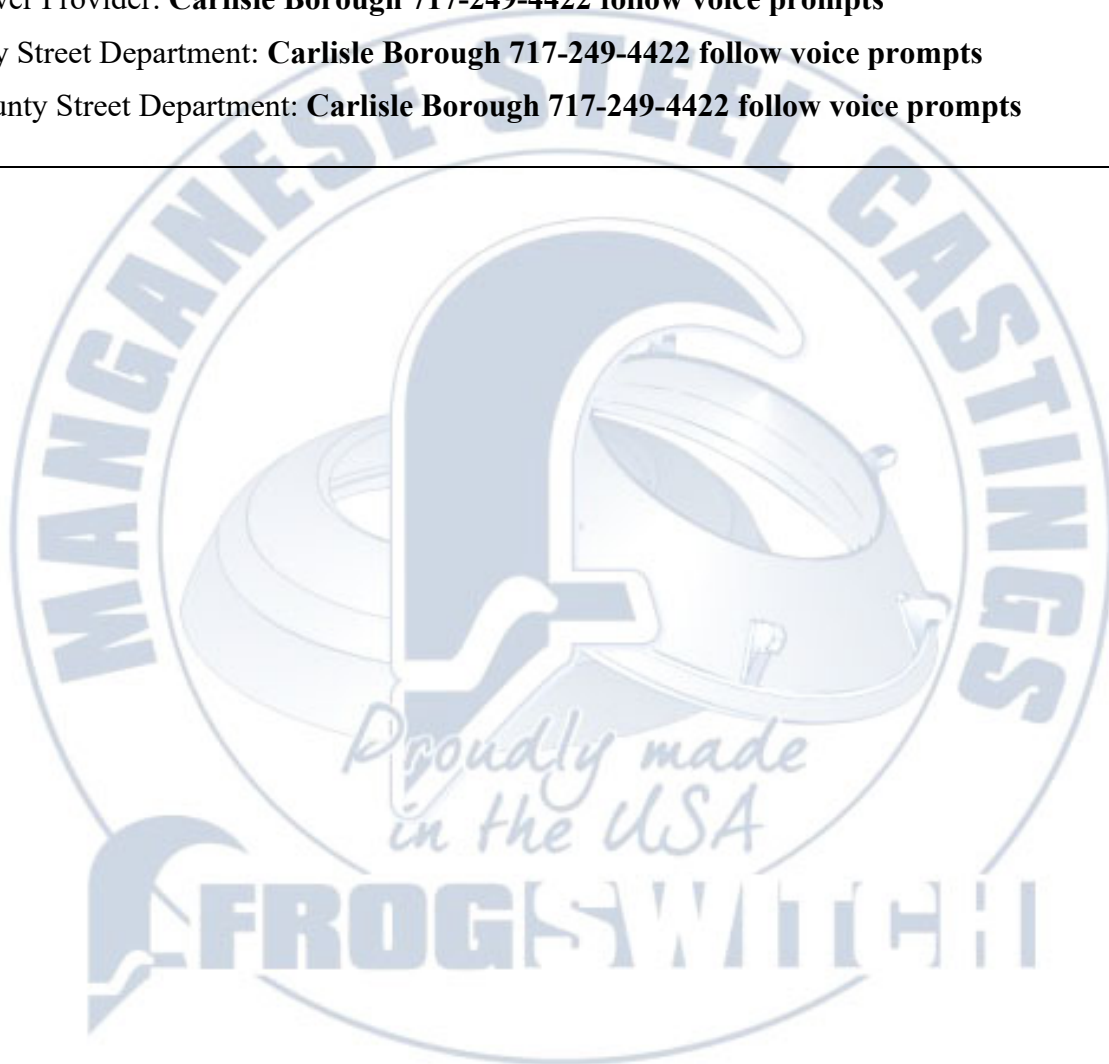
Electrical Company: **PPL 610-774-4757, Rachel Spradlin 484-635-0597**

Gas Company: **UGI – Gas Control Center 1-800-609-4844**

Sewer Provider: **Carlisle Borough 717-249-4422 follow voice prompts**

City Street Department: **Carlisle Borough 717-249-4422 follow voice prompts**

County Street Department: **Carlisle Borough 717-249-4422 follow voice prompts**



THE FROG, SWITCH & MANUFACTURING COMPANY

Receipt and Approval

The Contractor named above has been retained by Frog Switch to provide certain on-site work. The Contractor named above acknowledges that it has been furnished with copies of:

*** Contractor Safety, Health and Environmental Handbook dated: November 8th, 2022**

Also the Contractor's employees and sub-contractors who perform services on-site (now and in the future) have been made aware of the same. In addition, contractor's individual training records will be maintained and be made available upon request. Before any work is performed at the facility; contractors must make contact with the Environmental, Health & Safety Department; to review applicable items in this handbook.

All contractors (if not already provided) must provide along with this receipt a copy of the following: Workers Compensation, Liability insurance with The Frog, Switch & Manufacturing Company named as secondary in the policy.

Signature: _____ Date: _____

Print Name: _____

Title: _____

Company: _____