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Brunel Energy, Inc.

Electrical Safety – NFPA 70E

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1. Purpose

- 1.1. Brunel Energy, Inc., hereinafter referred to as, “the Company,” has established a program establish a program meeting or exceeding minimum acceptable standards for electrical safety-related work practices.
- 1.2. The Company program includes requirements for the comprehensive training of qualified and unqualified workers relating to the use of personal protective equipment, proper use of tools while working near electrical apparatus, testing procedures, working with specialized fixed equipment for various job functions, understanding working clearance and approach boundaries, determining nominal voltages, and identifying exposed energized parts.

2. Applicability

- 2.1. This policy applies to employees, subcontractors and/or visitor(s) of the Company. For the purposes of this policy, an employee shall be considered on the job whenever he/she is:
 - 2.1.1. On or in, any Company or client property, including parking areas; or
 - 2.1.2. On Company time even if off Company premises (including paid lunch, rest periods and periods of being on call).
- 2.2. As a condition of employment, Company employees are required to abide by additional governmental or customer policies and requirements that may be imposed at a worksite in addition to the requirements of these policies and procedures. Nothing set forth in this policy constitutes, construes, or interprets in any way as a contract of employment.

3. Definitions

- 3.1. **Approach Distances** must be established whenever work is to be conducted on electrical systems or components not in an electrically safe working condition.
- 3.2. **Flash Protection Boundary** is the distance beyond which appropriate flash protection equipment is required to prevent 2nd and 3rd degree burns.
- 3.3. **Limited Approach Boundary** is a shock protection boundary designed to keep nonqualified persons at a safe distance away from exposed electrical components. Only qualified workers are allowed within this boundary.
- 3.4. **Restricted Approach Boundary** is a secondary shock protection measure whereby accidental movement can put a body part or conductive object in contact with live parts. Approach distances listed in Table 1 represent minimum distances required between energized parts to an unprotected person or equipment. Only qualified personnel with proper protective equipment are allowed within this boundary.
- 3.5. **Disconnecting means** is a device by which the conductors of a circuit can be disconnected from their source of electrical supply. As an energy isolation control, it shall have the capability of being locked out.

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- 3.6. **Enclosure** is a case or housing of apparatus surrounding an installation to prevent personnel from accidentally contacting energized parts. If the enclosure is conductive, it must be grounded or bonded to a grounding system.
- 3.7. **Exposed** means capable of being inadvertently touched or approached nearer than a safe distance by a person. Not insulated
- 3.8. **Ground** is a conducting connection to the earth.
- 3.9. **Guarded** is covered, shielded, fenced, enclosed to otherwise protect by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach to a point of danger or contact by persons or objects.
- 3.10. **Isolated** means not readily accessible to persons unless special means for access are used.
- 3.11. **Non-Qualified Worker** is one who is not exposed to hazards and will not approach exposed parts of electric circuits operating at 50 volts or more to ground.
- 3.12. **Outlet** is a point on the wiring system at which the current is taken to supply utilization equipment.
- 3.13. **Qualified Worker** is One who has demonstrated an understanding of construction and operation of the equipment and has a full understanding of the associated hazards.
 - 3.13.1. Class 1 Division 1 - Is a location (a) in which hazardous concentrations of flammable gases or vapors may exist under normal operating conditions;
 - 3.13.2. or (b) in which hazardous concentrations of such gases or vapors may exist frequently because of repairs or maintenance operations or because of leakage;
 - 3.13.3. or (c) in which a breakdown or faulty operation or equipment or processes might release hazardous concentrations of flammable gases or vapors and might also cause simultaneous failure of electrical equipment.

4. Responsibilities

- 4.1. Manager(s):
 - 4.1.1. Shall ensure the requirements of this policy are followed. Annual review, and, if necessary, revise the Electrical Safety Program. Ensure training and retraining is made available to qualified employees.
- 4.2. HSE Supervisor(s):
 - 4.2.1. Shall conduct periodic (annually at a minimum) inspection using a Worksite Observation form to ensure safe work practices are followed. Ensure that protective equipment is available and tested as required. Discuss hazards with employees as determined through documented conversation with host employer or contractors.
- 4.3. Employee(s):

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- 4.3.1. Are responsible for using electrical equipment, tools, and appliances according to this program, for attending required training sessions when directed to do so and to report unsafe conditions to their supervisor immediately.
- 4.3.2. Only qualified employees may work on electric circuit parts or equipment that has not been de-energized. Such employees shall be made familiar with the use of special precautionary techniques, PPE, insulating and shielding material and insulated tools.
- 4.4. Subcontractor(s):
 - 4.4.1. Are responsible for using electrical equipment, tools, and appliances according to this program, for attending required training sessions when directed to do so and to report unsafe conditions to their supervisor immediately.
 - 4.4.2. Only qualified employees may work on electric circuit parts or equipment that has not been de-energized. Such employees shall be made familiar with the use of special precautionary techniques, PPE, insulating and shielding material and insulated tools.

5. Requirements

- 5.1. All electrical work shall be done to electrical standards.
 - 5.1.1. Only qualified personnel will perform electrical work.
 - 5.1.2. Only qualified personnel are authorized to provide on-site training.
 - 5.1.3. No shortcuts are permitted.
 - 5.1.4. Employees shall treat de-energized parts as if they are live, energized parts if those parts have not been locked and or tagged out of service.
 - 5.1.5. Employees exposed to the hazards of fixed electrical equipment or circuits, even though de-energized, the circuits that formerly energized those parts must be locked and or tagged out.
- 5.2. Conscientious observance of electrical safety procedures is expected of all qualified and nonqualified personnel; neglect of such responsibilities may subject the individual to serious injury. Failure to follow these procedures may result in disciplinary action.
- 5.3. Workplace Safety Observations shall be conducted for each affected employee at least once annually using the Workplace Observation Form (See Appendix 10.2).
- 5.4. The following procedures apply to both qualified and non-qualified personnel unless specifically referenced to qualified employees.

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6. Procedure

6.1. Job Briefing

- 6.1.1. Prior to starting each job involving exposed live equipment, the employee in charge shall conduct a Job briefing or Arc Flash Risk Assessment with the employees involved. The briefing shall cover the following:
 - 6.1.1.1. Hazards associated with the job where applicable. This includes identifying the exposures of shock (nominal voltage) and arc flash hazards.
 - 6.1.1.2. Work Procedures; including limited approach boundaries, treating exposed de-energized parts as live when parts when working around equipment.
 - 6.1.1.3. Special precautions include unshunted CTs, draining capacitors for 5 minutes and gradient potential issues.
 - 6.1.1.4. Energy source controls includes all lockout tagout points.
 - 6.1.1.5. Personal protective equipment
 - 6.1.1.6. Emergency response procedures
- 6.1.2. Additional job briefings shall be conducted if significant changes that might affect the safety of the employee occur during the work.
- 6.1.3. If working alone, the items listed above shall be carefully considered before working on or near energized systems.
- 6.1.4. The Energized Work Permit form may be used as a pre-work hazard assessment tool.

6.2. Selection and Use of Safe Work Practices

- 6.2.1. Only Qualified Personnel, who have been authorized by the department supervisor or manager, may make repairs to supply cords on electrical tools and to extension cords.
- 6.2.2. A thorough inspection of all equipment shall be done to evaluate for potential hazards. Ensure the integrity of all enclosures and insulation.
- 6.2.3. Live parts to which an employee may be exposed shall be de-energized by a qualified worker as specified in the Lockout Tagout Program before the employee works on or near them unless a greater hazard is introduced. Only qualified workers can complete tasks such as testing, voltage measuring, and troubleshooting within the limited approach boundary. The qualified worker shall test to ensure that the previously energized part is de-energized using a UL listed meter rated for the voltage being tested. Testers shall be verified in good condition by testing before and after the test at a known source. Conductors and parts of electrical equipment that have been de-energized but not been locked or tagged out shall be treated as live parts.

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- 6.2.4. If it is not feasible to de-energize exposed live parts, other safety-related work practices shall be used to protect the exposed employees. Only qualified personnel can work where exposed to energized equipment. Procedures utilized to perform this work shall include special precautionary techniques such as use of personal protective equipment, insulating and shielding material or insulated tools.
- 6.2.5. An Energized Work Permit shall be completed before beginning this work. The form is not required for troubleshooting or testing processes.
- 6.2.6. No work on or near exposed live parts is permissible without proper illumination.
- 6.2.7. Employees working in confined or enclosed spaces shall de-energize or effectively barricade with protective shields or barriers any exposed live parts. Doors or hinged panels shall be secured to prevent swinging freely.
- 6.2.8. Conductive materials and ladders shall be handled in such a manner that will prevent them from encroaching clearances as specified in table 1. Only non-conductive ladders with non-conductive side rails are allowed for use near possible energized parts.
- 6.2.9. Conductive apparel such as clothing, chains, watches, or rings shall not be worn while working within the limited approach boundary.
- 6.2.10. Interlocks shall not be bypassed unless a qualified person (see definitions) is temporarily working on equipment rated at less than 600 volts. For equipment rated at more than 600 volts, interlocks shall NEVER be bypassed.
- 6.2.11. Working on energized parts rated at 50-600 volts shall only be performed by qualified personnel who have had specific training on the parts and equipment to be worked on. The qualified employee's supervisor shall be contacted, and an energized work permit shall be completed before starting work on energized equipment with exceptions including testing, troubleshooting and inspections.
- 6.2.12. Work on exposed energized systems greater than 600 volts is not permitted unless specifically trained. Two qualified workers are required to open/close, rack out/in, test, and install temporary grounds on medium voltage equipment. Before grounding and working on medium voltage parts as de-energized, the parts must be tested using a proper tester rated for the voltage with a hot stick only.
- 6.2.13. Unqualified personnel are restricted from access to exposed energized parts of voltages greater than 50 volts. Qualified personnel shall place a barricade, guard energized parts, or have an attendant to prevent unqualified personnel from encroaching the limited approach or flash protection boundary, whichever is greater.
- 6.2.14. Blind reaching is not allowed in any electrical panels or equipment.
- 6.2.15. All Troubleshooting (and or) Testing above 50Volts, require voltage insulating gloves and other appropriate PPE (as outlined in section e).

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- 6.2.16. Inform the host employer if a hazardous condition is introduced or identified including corrective measures taken or required to make the condition safe.
- 6.2.17. All personnel shall maintain 10 feet from overhead power lines including handheld equipment and vehicles. (see table 1 limited approach listed in Table 1)

Table 1. Approach Boundary to Live Parts for Shock Protection

VOLTAGE RANGE Phase to Phase	LIMITED APPROACH BOUNDRY	RESTRICTED APPROACH BOUNDRY	MIN. FLASH PROTECTION BOUNDARY
0 - 50	Avoid Contact	Avoid Contact	N/A
51 - 250 volts	3 ft. 6 in. (1 m)	Avoid Contact	4 ft. (1.2 m) *
251 - 750 volts	3 ft. 6 in. (1 m)	1 ft. 0 in. (.3 m)	10 ft. (3.3 m) *
751 - 15,000 volts	5 ft. 0 in. (1.5 m)	2 ft. 2 in. (.7 m)	10 ft. (3.3 m) *

*** If an arc flash study has been completed, the arc flash boundary shall be as indicated on the arc flash label.**

- 6.3. Use of Portable Electric Equipment (applied to cord and plug connected equipment)
 - 6.3.1. This equipment shall be handled in a manner which will not cause damage. Avoid raising and lowering the equipment using flexible cords. Do not fasten cords with staples or other fasteners that may damage the outer jacket.
 - 6.3.2. Portable cord and plug equipment shall be inspected before use. If damage is detected it shall be removed from service. Extension cords shall periodically be given a continuity test along with the inspection to determine open points or short circuits (test for full continuity on each wire and zero continuity from wire to wire).
 - 6.3.3. Grounded type tools or equipment shall have the grounded-type plug and shall be inspected to ensure compatibility with the receptacle. Adapters may not be used.
 - 6.3.4. Ground Fault Circuit Interrupter (GFCI) devices shall be used for all cord and plug activities unless permanent GFCI installations are available. Wet locations such as vehicle parking areas, loading docks or where receptacles may be used to plug in equipment outside. Devices in these locations may include GFCI receptacles, receptacles protected by GFCI breakers, or field operations - portable cord-connected GFCI.
- 6.4. Power and Lighting Circuits (includes the use of circuit breakers and fuses)
 - 6.4.1. Load rated circuit breakers shall be used for opening and closing circuits. Fuses, terminal lugs, and cable splice connections shall not be used to make or break load.
 - 6.4.2. After a circuit has been de-energized by a circuit protective device, the circuit shall not be reenergized until it has been determined safe to do so by a qualified employee.

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- 6.4.3. Only qualified workers may perform testing work on electrical circuits. Test equipment shall be rated for the voltage to which it will be connected. A hot stick applied voltage tester is required to test voltages greater than 600 volts. ALL test equipment shall be UL listed as CAT IV and shall be tested at a known source before and after testing the previously energized parts. Proper testing de-energized parts shall include testing for impressed (line) to ground, back feed (load), and residual energy (phase to phase online and load).
- 6.4.4. Electrical equipment capable of igniting a spark shall not be used near flammable or ignitable material. Combustible material shall be removed if in proximity of an electrical panel or cabinet before work is allowed.
- 6.4.5. Materials shall not be stored on equipment. Before removing covers, material shall be removed.
- 6.5. Safeguards for Personal Protection (includes the use of PPE)
 - 6.5.1. Selected employees will be furnished with and shall always use PPE. The level of PPE used is determined by conducting an assessment and choosing a level of protection that significantly reduces or eliminates the risk of injury related to the hazard and is in accordance with Appendix 10.3 Table 130.7(C)(14).
 - 6.5.2. Conducting a job briefing and consulting the information in this program prior to performing any work will determine the hazards associated with the job. This process in conjunction with information on the Tables within this program will assist in determining the level of protection needed to work with or near electrical apparatus. See Table 2 to determine hazard risk classifications and PPE requirements. A simplified program is used as follows:
 - 6.5.2.1. If the task is identified by a hazard risk category 1 or 2, the qualified employee shall wear HRC 2 protective equipment.
 - 6.5.2.2. If the task is identified by a hazard risk category 3 or 4, the qualified employee shall wear HRC 4 protective equipment.

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Table 2. Hazard Risk Category Classification

TASK	RATING
Electrical work on systems rated 240 volts or less including: Operate circuit breakers or fused switches and disconnects with doors closed, cable trough or tray cover removal, work on control circuits 120 volts or less.	0
Working on electrical systems rated at 240 volts or less including: removal of bolted covers on control circuit enclosures and voltage testing.	1
Working on or near exposed energized parts rated at 600 volts or less where exposed to electrical parts where the arc flash hazard is determined to be less than 8 cal/cm ² and no physical work is performed that may cause a serious arc flash and that is not listed in HRC 3 or 4 categories.	2
Working on or near exposed energized parts rated at 600 volts or less including removing bolted covers on exposed 480-volt cabinets where the hazard risk category is greater than 8 cal/cm ² or unknown, open cover to exposed parts of an ATS, racking in or out 480-volt generator breakers on an energized bus.	3
Work on exposed parts rated greater than 25 cal/cm ² including energized parts of pad-mounted 480-volt transformers, main switchgear bus, racking in or out medium voltage breakers and transfer switches, phasing, or other energized work, testing and grounding with a hot stick.	4

Note 1: Table 2 may be used where available fault current is less than 25,000 amps. If fault current exceeds 25 kA an engineering study must be performed to determine the arc flash hazard.

Note 2: The hazards may be identified on an equipment label where an arc flash study has been conducted. This data will take precedence over the information in Table 2.

Note 3: Personal protective equipment shall be used to protect from electrical hazards that have not been eliminated by de-energizing or guarding. All personal protective equipment shall be inspected prior to each day's use and immediately following any incident.

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- 6.5.3. Eye Protection shall be used such as plastic rimmed safety glasses with side shields meeting Z87 standards shall always be used while working on or near exposed live parts. (HRC 0-4).
- 6.5.4. Face Protection a tinted arc shield with a balaclava-style hood shall be worn when working where there is a danger of flying objects from an electrical arc for HRC 1 or 2 hazards. Safety glasses shall be worn in conjunction with the shield. A full FR hood (beekeeper style) shall be used for high incident energy levels on category 3 or 4. (Hazard Rating 1-4).
- 6.5.5. Head Protection Non-conductive hard hats shall be worn where employees are exposed to electrical conductors that could contact the head such as open bus work. (Hazard Rating 0-4).
- 6.5.6. Hearing Protection Arc-rated hearing protection is required for all electrical switching of devices or where exposed to energized electrical parts rated greater than 50 volts.
- 6.5.7. Insulated Equipment:
 - 6.5.7.1. Rubber gloves rated for the voltage shall be worn when working within the restricted approach boundary on exposed parts with voltages over 50 volts. Rubber gloves shall be air tested before each day's use and dielectrically tested every 6 months (or every month if used in mine facilities governed by MSHA, Title 30 of the code of Federal Regulations). Class 0 rubber gloves may be used on voltages up to 750 volts (or 1000 volts DC). Class 2 rubber gloves are required for voltages greater than 750 volts but less than 15,000 volts, however direct contact with energized parts using rubber gloves with voltages exceeding 750 volts from a ground position is prohibited (Hazard Rating 0-4).
 - 6.5.7.2. Insulated barriers (rolled rubber material) approved for use on energized equipment may be used to isolate the employee from the energized parts in lieu of using rubber gloves to avoid contact on lower voltages. Rubber gloves shall be used to install barrier material. (Hazard Rating 1-4).
- 6.5.8. Clothing:
 - 6.5.8.1. Only natural fiber clothing (cotton or wool) shall be used at a minimum while working near exposed live parts including undergarments. In addition, if conditions dictate that an arc flash hazard exists, arc-rated (AR) clothing may be required. (See Table 2 for HRC levels and Table 3 for calorie/cm² ratings).

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Table 3 Protective Clothing

HAZARD RISK CATAGORY	CLOTHING DESCRIPTION	Minimum ATPV*
0	Untreated cotton clothing	N/A
1 and 2	AR shirt and AR pants or AR Coveralls	8
3 and 4	AR switching coat and pants, Arc Hood	40

* ATPV – Arc Thermal Performance Exposure Value
AR – Arc Rated

- 6.5.9. Hot-Line Tools shall be used to test voltages or place protective grounds on systems greater than 600 volts. An approved hot-line voltage tester connected to a hot-stick (shotgun) shall be used to verify that all circuits to be worked on are de-energized. The tester shall first be brought into contact with a live source (if possible) to ensure it operates correctly, then it shall be put into contact on all phases of the previously energized parts and then again to an energized source. If no such source is available, the self-test method shall be utilized by engaging the test mechanism on the tester.
- 6.5.10. Grounding for Protection -no work shall be performed on any electrical components rated at greater than 600 volts without first testing to ensure parts are de-energized (USING ONLY A VOLTMETER RATED FOR THE VOLTAGE), then installing grounds to all previously energized parts. Effective barricades shall be in place to avoid contact with any other source of electrical energy before attempting to install grounds. Temporary grounding equipment shall be tested every 3 years.
- 6.5.11. Foot Protection safety-toe leather boots shall always be worn. Electrical-rated boots shall be considered to provide additional resistance for protection of the worker. Extreme care shall be maintained in the immediate area where hazardous step potential or voltage gradients on the earth may be present. Short heel-to-toe steps will minimize gradient potential and should be used when a fault occurs on medium voltage equipment.
- 6.6. Additional Safety Requirements (includes the use of signs and barriers)
 - 6.6.1. Safety symbols or signs shall be prominently displayed to warn employees about electrical hazards. This may include warning signs on panel doors, doors to electrical rooms or any hazardous location which may endanger employees. If signs are not in place on customer-owned equipment and voltage is unknown, covers or doors shall not be opened until these voltages are determined.
 - 6.6.2. Protective shields, protective barriers, or insulating material shall be used to protect employees from shock, burns or electrically related injuries while the employee is working near exposed energized live parts. Conductive barricades shall not be used. Barricades i.e., “Danger Tape” shall be used to prevent non-qualified workers from entering an electrical exposure limited approach boundary.

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- 6.6.3. No electrically conductive cleaning materials shall be used in proximity to energized parts, and no house-keeping duties at close distances to parts that could be energized.

7. Training

- 7.1. All employees shall receive training upon initial hire and annually thereafter, or when employees are not complying with safety-related work practices or when workplace changes necessitate the use of safety-related work practices that are different from those the employee would normally use.
- 7.2. Employees performing electrical work whether energized or de-energized, must be trained in the electrical safe work practices that relate to their respective job assignments to ensure their safety.
- 7.3. The training required by this section may be of the classroom or on-the-job type. The degree of training provided must be determined by the risk to the employee.
- 7.4. Qualified employees shall be trained in and familiar with the safety-related work practices that pertain to their respective job assignments.
- 7.5. Qualified persons whose work on energized equipment involves either direct contact or contact by means of tools or materials shall be capable of working safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials and insulated tools.
- 7.6. Training shall be documented, and re-training shall be performed at intervals not to exceed 3 years.
- 7.7. Each qualified electrical worker shall be instructed in CPR, first aid, AED and techniques needed to safely release victims.
- 7.8. A demonstration of the employee's knowledge shall be documented. This can be via written test, documentation of successful completion of training, and by on-site demonstration of understanding through workplace observations. Each employee shall be evaluated at least annually to ensure continued understanding and competence.
- 7.9. A qualified employee shall also demonstrate knowledge of the construction and operation of equipment and specific work methods associated with the electrical task. Employees who are not qualified persons shall also be trained in and familiar with any electrically related safety practices not specifically addressed in this document, but which are necessary for their safety. Qualified persons (i.e., those permitted to work on or near exposed energized parts) shall, at a minimum, be trained in and familiar with the following:
- 7.9.1. The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment by identifying exposed conductive parts that are isolated from ground and performing a voltage test.

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- 7.9.2. The skills and techniques necessary to determine the nominal voltage of exposed live parts by examining labels, nameplates, one-line diagrams, or for medium voltage, the construction and spacing. Colored tape may be an indicator but should not be relied upon to determine nominal voltage.
- 7.9.3. The approach boundaries specified in Table 1 and the corresponding voltages to which the qualified person will be exposed.
- 7.9.4. All PPE used must meet acceptable requirements.
- 7.9.5. The proper inspection, donning and use of personal protective equipment including EH hardhat, arc protection equipment and clothing, rubber gloves and insulating materials and tools.

8. Recordkeeping

- 8.1. Training records, licenses, work permits, and safety observation forms shall be kept and maintained.

9. Reference

- 9.1. NFPA 70E – Standard for Electrical Safety in the Workplace

10. Appendix

- 10.1. Energized Work Permit
- 10.2. Workplace Safety Observation Form
- 10.3. TABLE 130.7(C)(14) Standards on Protective Equipment

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APPENDIX 10.1 ENERGIZED WORK PERMIT

PART 1 TO BE COMPLETED BY THE REQUESTER	
Job/Work Order Number _____	
1. Description of circuit/equipment/job location: _____	
2. Description of work to be done: _____	
3. Justification of what the circuit/equipment cannot be de-energized or the work deferred until the next scheduled outage: _____	
PART II: TO BE COMPLETED BY THE ELECTRICALLY QUALIFIED PERSONS DONG THE WORK	
	Check when Complete
1. Detailed job description procedure to be used in performing the above detailed work: _____	<input type="checkbox"/>
2. Description of the safe work practices to be employed: _____	<input type="checkbox"/>
3. Results of the shock hazard analysis: _____	<input type="checkbox"/>
4. Determination of shock protection boundaries: _____	<input type="checkbox"/>
5. Results of the flash hazard analysis: _____	<input type="checkbox"/>
6. Determination of the flash protection boundary: _____ _____	<input type="checkbox"/>
7. Necessary personal protective equipment to safety perform the assigned task : _____	<input type="checkbox"/>
8. Means employed to restrict the access of unqualified persons from the work area: _____	<input type="checkbox"/>
9. Evidence of completion of job briefing including discussion of any job-related hazards: _____	<input type="checkbox"/>
10. Do you agree the above described work can be done safely? <input type="checkbox"/> Yes <input type="checkbox"/> No (if no, return to requester)	
Electrically Qualified Person(s) _____	Date _____
PART III: APPROVAL(S) TO PERFORM THE WORK WHILE ELECTRICALLY ENERGIZED	
Manufacturing Manager _____ Maintenance/Engineering Manager _____	
Safety Manager _____ Electrically Knowledgeably Person _____	
General Manager _____ Date _____	
Note: Once the work is complete, forward this form to the site Safety Department for review and retention.	

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APPENDIX 10.2 WORKPLACE SAFETY OBSERVATION FORM

Evaluator Name: _____ Date: _____ Time: _____ AM/PM

Worker 1 Observed: _____

Worker 2 Observed: _____

Please check the boxes below including a brief description of the discrepancy related to each "No" checked. In the comment section or back side of form.

Job & Location: _____

I. PERSONAL SAFETY

	Worker 1				Worker 2			Comments
	Yes	No	N/A		Yes	No	N/A	
Arc Rated Clothing On								_____ Cal/cm ² or PPE Level _____
Face and Eye Protection Used								
Rubber Gloves: in Tolerance, Tested, Used								
Leather Protector Gloves Used								
Insulated Tools Used								
GFCI Portable Device Used								

II. PROPER WORK METHODS

	Yes	No	N/A
Can Identify Potentially Energized Parts Y/N _____, Nominal Voltage: _____ volts			
Can State Approach Boundaries: Limited: _____ Restricted: _____ Arc Flash: _____			
Accurately Determined Arc Flash Hazard at 18" Working Distance			
Lockout/Tagout Equipment and Procedures Used Properly			
Sufficiently Illuminated			
Testing properly with Appropriate Meter to Determine all Parts are De-energized			
Housekeeping Clean and Neat on Job Site			
Visually Inspect Equipment, PPE, Meters, Cords and Test Leads			
Equipment is Properly Grounded			
Demonstrate Knowledge of Construction and Operation of Equipment			

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III. COMMENTS

<i>Please explain any "NO" answers and note any other deficiencies that are not specifically covered by a checklist item:</i>			
Employee Signature		Date	
Employee Signature		Date	
Evaluator Signature		Date	

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APPENDIX 10.3 TABLE 130.7(C)(14) STANDARDS ON PROTECTIVE EQUIPMENT

**NFPA 70E Table 130.7(C)(14)
Standards on Protective Equipment**

Subject	Number and Title
Apparel-Arc Rate	ASTM 1506-10a Standard Performance Specification for Flame Resistant and Arc-Rated Textile Materials for Use by Electrical Workers Exposed to Momentary Electrical Arc and Related Thermal Hazards.
Aprons-Insulating	ASTM 2677-08a Standard Specifications for Electrically Insulating Aprons
Eye and Face Protection -General	ANSI/ASSE Z87.1-2003 Practice for Occupational and Educational Eye and Face Protection
Face-Arc Rated	ASTM F 2178-08 Standard Test Method for Determining the Arc Rating and Standard Specification for Face Protective Products
Fall Protection	ASTM F 887-10 Standard Specifications for Personal Climbing Equipment
Footwear - Dielectric Specification	ASTM F 1117-03 (2008) Standard Specifications for Dielectric Footwear
Footwear - Dielectric Test Method	ASTM F 1116-03 (2008) Standard Test Method for Determining Dielectric Strength of Dielectric Footwear
Footwear - Standard Performance Specification	ASTM F 2413-05 Standard Specification for Performance Requirements for Foot Protection
Footwear – Standard Test Method	ASTM F 2412-05 Standard Test Methods for Foot Protection
Gloves – Leather Protectors	ASTM F 696-06 Standard Specification for Leather Protectors for Rubber Insulating Gloves or Mittens
Gloves – Rubber Insulating	ASTM D 120-09 Standard Specification for Rubber Insulating Gloves
Gloves and Sleeves – In-Service Care	ASTM F 496-08 Standard Specification for In-Service Care of Insulating Gloves and Sleeves
Head Protection – Hard Hats	ANSI/ISEA Z89.1-2009 Personal Protection – Protective Headwear for Industrial Workers
Rainwear - Arc	ASTM F1891-06 Standard Specification for Arc and Flame Resistant Rainwear
Rubber Protective Products - Visual Inspections	ASTM F 1236-96 (2007) Standard guide for Visual Inspection of Electrical Protective Rubber Products
Sleeves – Insulating	ASTM D 1051-08 Standard Specifications for Rubber Insulating Sleeves