

Version: 24.0	Assured Equipment Grounding Conductor or Ground Fault Circuit Interrupter (GFCI)	
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Brunel Energy, Inc.

Assured Equipment Grounding Conductor or Ground Fault Circuit Interrupter (GFCI)

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1. Purpose

- 1.1. Brunel Energy, Inc., hereinafter referred to as, “the Company,” has established a program compliant with OSHA 29 CFR 1926.404, so that electrical equipment is free from recognized hazards that are likely to cause death or serious physical harm to employees.

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. **Accessible** is admitting close approach; not guarded by locked doors, elevation, or other effective means.
- 3.2. **Ampacity** is the current in amperes a conductor can carry continuously under the conditions of use without exceeding its temperature rating.
- 3.3. **Circuit Breaker** types:
 - 3.3.1. 600 volts nominal, or less is a device designed to open and close a circuit by nonautomatic means and to open the circuit automatically on a predetermined overcurrent without injury to itself or an employee when properly applied within its rating.
 - 3.3.2. Over 600 volts nominal switching device capable of making, carrying, and breaking currents under normal circuit conditions, for a specified time. Breaking currents under specified abnormal circuit conditions, such as those of short circuit.
- 3.4. **Competent Person** is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- 3.5. **Conductor** types:
 - 3.5.1. Bare conductor having no covering or electrical insulation whatsoever.

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- 3.5.2. Covered conductor encased within material of composition or thickness that is not recognized as electrical insulation.
- 3.5.3. Insulated conductor encased within material of composition and thickness that is recognized as electrical insulation.
- 3.6. A **device** is a unit of an electrical system which is intended to carry but not utilized electric energy.
- 3.7. **Disconnecting** a device, or group of devices, or other means by which the conductors of a circuit can be disconnected from their source of supply.
- 3.8. **Equipment** is a general term including material, fittings, devices, appliances, fixtures, apparatus, and the like, used as a part of, or in connection with, an electrical installation.
- 3.9. **Ground** is a conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of the earth.
- 3.10. **Grounded** is connected to earth or to some conducting body that serves in place of the earth.
- 3.11. **Ground-Fault Circuit-Interrupter** is a device whose function is to interrupt the electric circuit to the load when a fault current to ground exceeds some predetermined value that is less than that required to operate the overcurrent protective device of the supply circuit.
- 3.12. **Qualified Person** is one by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.
- 3.13. **Receptacle** is a contact device installed at the outlet for the connection of a single attachment plug. A single receptacle is a single contact device with no other contact device on the same yoke. A multiple receptacle is a single device containing two or more receptacles.
- 3.14. **Receptacle Outlet** is where one or more receptacles are installed.
- 3.15. **Service** means the conductors and equipment for delivering energy from the electricity supply system to the wiring system of the premises served.
- 3.16. **Service Equipment** is the necessary equipment, usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the point of entrance of supply conductors to a building or other structure, or an otherwise defined area, and intended to constitute the main control and means of cutoff of the supply.

4. Responsibilities

- 4.1. Manager(s):
 - 4.1.1. Are responsible for implementing, supporting, and enforcing the requirements of this Standard in their locations.

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4.2. HSE Supervisor(s):

- 4.2.1. Are designated as competent persons for the Assured Equipment Grounding Conductor Program and are responsible for program execution. One or more competent persons must be designated (as defined in 1926.32(f) to implement and execute the program.

4.3. Employee(s):

- 4.3.1. Are responsible for following the requirements of this program, performing visual inspections, and taking defective equipment out of service.
- 4.3.2. Only qualified persons may work electric circuit parts or equipment that have not been deenergized under the lockout/tagout provisions of subsection 1910.333(b). These qualified persons shall be capable, as determined by their electrical knowledge and skills, of working safely on energized circuits.

4.4. Subcontractor(s):

- 4.4.1. Are responsible for following the requirements of this program, performing visual inspections, and taking defective equipment out of service.

5. Requirements

- 5.1. The company shall always use Ground Fault Circuit Interrupters. The Assured Equipment Grounding Conductor Program (AEGCP) is in place and shall cover all cord sets, receptacles not a part of the permanent wiring of a structure and equipment connected by cord and plug on all construction and maintenance sites.
- 5.2. The Assured Equipment Grounding Program shall comply with the following minimum requirements:
- 5.2.1. This written description of the program shall be kept at the jobsite for inspection and copying by OSHA and any affected employee.
- 5.2.2. One or more “competent person” shall be designated at each jobsite to implement and maintain the program.
- 5.2.3. The GFCI must be the first device plugged into a permanent receptacle and must be tested before each use.
- 5.2.4. Only Qualified employees may work on equipment that has not been deenergized.
- 5.3. All 120-volt, single-phase 15 and 20 ampere receptacle outlets on construction or maintenance sites, which are not part of the permanent wiring of the building or structure, and which are in use by employees, shall have approved ground fault circuit interrupters for personnel protection.
- 5.4. All hand portable electric tools and extension cords shall use a GFCI.

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5.5. Additionally, approved GFCI's shall be used for 240-Volt circuits in the same service as described above. GFCI's must be used on all 120 volts, single-phase 15 amp and 20-amp receptacles within 6 feet of a sink, damp areas or on installed outdoor equipment.

6. Procedure – Testing GFCI's

6.1. All GFCI's shall be tested once every three (3) months to make sure they are working properly. Equipment shall be tested:

- 6.1.1. Before each use.
- 6.1.2. Before equipment is returned to service following any repairs.
- 6.1.3. Before equipment is used as when a cord has been run over.
- 6.1.4. At intervals not to exceed 3 months, except that cord sets and receptacles which are fixed and not exposed to damage shall be tested at intervals not exceeding 6 months.

6.2. All equipment grounding conductors shall be tested for continuity and shall be electrically continuous.

6.3. Each receptacle and attachment cap or plug shall be tested for correct attachment of the equipment grounding conductors. The equipment grounding conductor shall be connected to its proper terminal.

6.4. Each receptacle, cord set, and cord and plug connected equipment that passed the test shall be uniquely identified by a marking or tagging method suitable for the environment. Failed and damaged equipment shall be tagged "Do Not Use" and removed (isolated) from service until repaired or replaced.

6.5. All tested cord sets, and cord and plug-connected equipment shall be marked, at one or both ends, with colored tape to denote the month that the tests were performed. The below color code chart that must be followed for marking.

Month #	Month	Color of Tape Apply to Cords
1	January	Red
2	February	Yellow
3	March	Green
4	April	Blue
5	May	Brown
6	June	White
7	July	Start over with Red and repeat

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6.6. Inspections

6.6.1. Cords, attachment caps, plug and receptacle of cord sets, and any equipment connected by cord and plug (with the exception of cord sets and receptacles which are fixed and not exposed to damage) shall be inspected daily before use for damage, defects, or signs of wear. Damaged items shall not be removed from use until repaired by a qualified person or shall be discarded.

6.7. Lock Out/Tag Out

6.7.1. Equipment found or suspected of having damage, defects or excessive wear shall be removed from service and tagged, "Do Not Use." Damaged items shall not be used until repaired.

6.8. Safe Work Practices

6.8.1. Only qualified persons shall work on energized parts.

6.8.2. Qualified persons shall adhere to the following approach distances:

- 6.8.2.1. 300V and less – avoid contact
- 6.8.2.2. Over 300V, not over 750V – 1 foot and 0 inches
- 6.8.2.3. Over 750V, not over 2kV – 1 foot and 6 inches
- 6.8.2.4. Over 2kV, not over 15kV – 2 feet and 0 inches
- 6.8.2.5. Over 15 kV, not over 37kV – 3 feet and 0 inches
- 6.8.2.6. Over 37kV, not over 87.5kV – 3 feet and 6 inches
- 6.8.2.7. Over 87.5kV, not over 121kV – 4 feet and 0 inches
- 6.8.2.8. Over 121kV, not over 140kV – 4 feet and 6 inches

6.8.3. Employees standing on the ground may not contact the vehicle or mechanical equipment or any of its attachments, unless the employee is using protective equipment rated for the voltage; or the equipment is located so that no uninsulated part of its structure (that portion of the structure that provides a conductive path to employees on the ground) can come closer to the line than ten feet.

6.8.4. Employees shall not enter spaces containing exposed energized parts unless illumination is provided that allows employees to work safely.

6.8.5. Protective shields, protective barriers or insulating materials shall be used when working in confined or enclosed spaces where electrical hazards may exist.

6.8.6. Portable ladders shall have non-conductive side rails.

6.8.7. Conductive jewelry or clothing shall not be worn.

6.8.8. Ground fault circuit interrupters (GFCIs) shall be in service.

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7. Training

- 7.1. Employees shall be trained in the Ground Conductor and GFCI Employee Protection Program prior to exposure and annually thereafter. Training should include the following topics:
 - 7.1.1. Employee Responsibilities
 - 7.1.2. Ground-Fault Circuit Interrupters
 - 7.1.3. GFCI's Testing Procedure
 - 7.1.4. Assured Grounding Program
 - 7.1.5. Program Color Code
 - 7.1.6. Reporting and documentation

8. Recordkeeping

- 8.1. Site supervisors shall collect inspection and Testing records. A copy of the inspection shall be kept on the jobsite as required by 29 CFR 1926.404(b)(1)(iii)(G) and retained for 5 years.
- 8.2. Training records shall be retained for a minimum of the employee's duration of employment.

9. Reference

- 9.1. OSHA 29 CFR 1926.404

10. Appendix

- 10.1. Ground Fault Circuit Interrupter (GFCI) Inspection Sheet

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APPENDIX 10.1 GROUND FAULT CIRCUIT INTERRUPTER (GFCI) INSPECTION SHEET

Ground Fault Circuit Interrupter (GFCI) INSPECTION SHEET			
Date		Location	
Qualified Competent Person		Phone	
Supervisor		Phone	
Receptacle and Cord Sets Inspected:		Color of Tape Applied for Month Inspected	
1.			
2.			
3.			
4.			
5.			
6.			
7.			
Attachment Caps Inspected		Color of Tape Applied for Month Inspected	
1.			
2.			
3.			
4.			
5.			
6.			
7.			
Plugs Inspected		Color of Tape Applied for Month	
1.			
2.			
3.			
4.			
5.			
6.			
7.			

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Equipment Locked or Tagged Out:		Removed from Service and tagged, Do Not Use	
1. 2. 3. 4. 5. 6. 7.			
Supervisor or Competent Person		Date	

Month #	Month	Color of Tape Apply to Cords
1	January	Red
2	February	Yellow
3	March	Green
4	April	Blue
5	May	Brown
6	June	White
7	July	Start over with Red and repeat