

Electrical Safety & GFCI/AEGCP Program

Guy's Construction
123 Main Street, Anytown, CA 90210

29 CFR 1926.400-449 (Subpart K)

Effective Date: June 08, 2026

SAMPLE DOCUMENT - NOT FOR COMPLIANCE USE

JURISDICTION AND REGULATORY FRAMEWORK

Electrocution is the #4 leading cause of death in construction (Fatal Four). Approximately 70 construction workers are electrocuted on the job each year.

- electrical shock

29 CFR 1926.404(b)(1)(ii)

- all 120V, single-phase, 15/20A receptacle outlets on construction sites must have GFCI protection OR assured equipment grounding conductor program

29 CFR 1926.404(b)(1)

STATE-SPECIFIC: California has additional electrical safety requirements:

- electrocution or arc flash
- electrical shock or electrocution
- physical or electrical contact with the electric power circuit
- electrical shock or electrocution
- increased risk of arc flash or electrocution
- this part with approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51
- top of the pipe protrudes above the underwater natural bottom in waters less than 15 feet (4.6 meters) deep
- 125 mL (4.22 fluid ounces) net capacity each for liquids
- original tare weight in kilograms preceded by the letters "TW"
- 1 L (0.3 gallons) net capacity each for Packing Group II (aircraft)
- portable equipment
- GFCI protection for all 120-volt, 15- and 20-ampere receptacle outlets on construction sites

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- GFCI protection for all 120V 15/20A receptacles on construction sites

T8 CCR 1531

- GFCI protection outdoors
- third physician to conduct examinations, consultations, laboratory tests and discussions with prior physicians as necessary to resolve disagreement
- fiberboard box (4G) or fiber drum (1G) with plastic inner packaging not exceeding 5 kg (11 lbs) and maximum net mass not more than 25 kg (55 lbs)
- a diagrammatic sketch of the mechanical installation along with a detailed explanation of the flow, procedures and frequency of well tests, calibration/proving of metering devices and allocation formulas
- the overall status of implementation of the provisions of this Part relating to the identification, inventory, and removal of underwater obstructions
- a list of interested parties (those with interests in the leases and/or units from which production is to be commingled for which the applicant has no existing commingling authority)
- Standard Guide for Home Laundering Care and Maintenance of Flame, Thermal and Arc Resistant Clothing
- Standard Guide for Industrial Laundering of Flame, Thermal, and Arc Resistant Clothing
- ASTM F1449
- ASTM F2757
- requirements of part 178 at the Packing Group I or II performance level (unless otherwise excepted)

- for allowing expansion, contraction, jarring and vibration of all pipe
- in portable tanks
- connectors and/or edges of the battery cover to facilitate stacking of batteries
- 2.5 kg (5.5 pounds) in glass inner packagings
- 1926.400
- 29 CFR 1926.400 Introduction
- 29 CFR 1926.400
- at least every two months for each employee covered under paragraphs (j)(1)(i) or (ii) whose last blood sampling and analysis indicated a blood lead level at or above 40 µg/dl. This frequency shall continue until two consecutive blood samples and...
- in accordance with paragraph (n)(9) of this section
- to water tanks with a capacity of fifty (50) barrels or less
- tank bottom integrity according to a plan included in the operations and maintenance manual under § 195.402(c)(3) if structural conditions prevent access to the tank bottom
- a report to FRA detailing all results of the qualification program (including simulation comparison if required)
- provisions for applying more restrictive criteria when conducting ECDA for the first time on a pipeline segment (direct examination)
- any Class I waste plume existing at the time of permitting

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1.0 PROGRAM OVERVIEW

Guy's Construction uses temporary electrical power on all construction projects. 29 CFR 1926.404(b)(1) requires employers to use GFCI on all temporary wiring OR maintain a written AEGCP. This program documents both methods.

2.0 HOW ELECTROCUTION KILLS

Current Through Body	Effect
1 mA (0.001A)	Barely perceptible tingle
5 mA	GFCI trips at this level. Slight shock.
10-20 mA	Painful. Muscle contraction may prevent letting go.
20-75 mA	Severe shock. Respiratory arrest possible.
75-100 mA	Ventricular fibrillation. Usually fatal without defibrillation.
Over 200 mA	Severe burns, cardiac arrest. Usually fatal.

A standard 15-amp circuit delivers 15,000 milliamps. It takes only 75 mA to kill. The circuit breaker protects the WIRE, not the WORKER. Only a GFCI protects the worker.

Wet skin reduces resistance from 100,000 ohms to 1,000 ohms. Current path through the heart (hand-to-hand or hand-to-foot) is most dangerous.

3.0 GFCI PROTECTION (PRIMARY METHOD)

A GFCI monitors current imbalance between hot and neutral. If >5 mA leaks to ground (potentially through a person), the GFCI trips in 1/40th of a second.

3.1 Where Required

- ALL 125V, single-phase, 15- and 20-amp receptacles on construction sites not part of permanent wiring
- Includes temporary panels, spider boxes, extension cord outlets, generator outlets

3.2 Types of GFCI

Type	Description	Best For
GFCI receptacle	Outlet with built-in GFCI. Protects downstream.	Permanent in temp panels
GFCI breaker	Breaker with GFCI. Protects entire circuit.	Temp panels, spider boxes
Portable (in-line)	Plug-in between outlet and tool cord.	Existing non-GFCI outlets, generators
Cord-connected	GFCI built into the extension cord.	Field use

3.3 Testing

- Test each GFCI before first use each day: press TEST (should trip), press RESET
- If does not trip: do NOT use. Replace the device.
- GFCI that trips during use: investigate cause before resetting. Repeated tripping = ground fault in tool/cord.

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4.0 AEGCP (ALTERNATIVE METHOD)

If you use GFCI on all outlets, you do not need an AEGCP. AEGCP is the alternative when GFCI is impractical on certain circuits.

- Requires: written program, designated competent person, regular testing
- Test all cord sets, receptacles, and cord-connected equipment
- Test intervals: before first use, after repair, every 3 months
- Tests: continuity of grounding conductor, proper terminal connection

Color-Coding System

Quarter	Color	Months
Q1	WHITE	January - March
Q2	GREEN	April - June
Q3	RED	July - September
Q4	ORANGE	October - December

Equipment without current quarter color tag must be retested before use.

5.0 TEMPORARY WIRING

- Remove immediately upon completion of construction
- All circuits from approved power source with overcurrent protection
- Temporary lighting: guards required, not suspended by cords unless designed for it
- All receptacles must be grounding type (3-prong)
- Conductors protected from damage: not through doorways, not in traffic, not in water

6.0 EXTENSION CORD SAFETY

- Inspect entire length before each use: cuts, abrasion, exposed conductors, damaged jacket
- All three prongs intact. Never remove grounding prong.
- Electrical tape 'repairs' = damaged cord. Replace it.
- Not a substitute for fixed wiring. Never through walls, ceilings, or pinched in doorways.

Cord Sizing

Length	14 AWG (15A)	12 AWG (20A)	10 AWG (30A)
25 ft	15A max	20A max	30A max
50 ft	13A max	16A max	24A max
100 ft	10A max	13A max	20A max
150 ft	7A max	10A max	15A max

Undersized cord overheats, melts insulation, causes ground fault or fire.

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7.0 OVERHEAD POWER LINE SAFETY

Contact with overhead lines is the #1 cause of crane-related electrocution:

Voltage	Minimum Clearance
Up to 50 kV	10 feet
Over 50 kV	10 feet + 4 inches for each additional 10 kV over 50 kV
Unknown voltage	Assume >50 kV. Contact the utility.

- Survey for overhead lines before starting work each day
- Assume ALL lines are energized until utility confirms de-energization in writing
- Use spotter for cranes/equipment near lines

IF EQUIPMENT CONTACTS A POWER LINE: STAY IN THE CAB. The ground is energized. Do not exit unless fire. Jump clear with feet together, shuffle or hop away.

8.0 UNDERGROUND ELECTRICAL HAZARDS

- Call 811 before excavation. Hand dig within tolerance zone.
- If cable struck: do not touch, evacuate, call 911 and utility
- Treat all underground cables as energized until utility confirms isolation

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9.0 LOCKOUT/TAGOUT

29 CFR 1926.417: de-energize and lock/tag circuits before work on exposed energized parts.

- De-energize at source (breaker, disconnect)
- Each worker applies their own lock
- Verify de-energized: live-dead-live method with voltage tester
- Tags alone only when locks not feasible. Signed, dated, with reason.

10.0 ARC FLASH AWARENESS

Arc flash: explosive energy release from electrical fault. Temperatures reach 35,000F. Causes severe burns, blindness, death.

- NFPA 70E establishes risk assessment, PPE categories, approach boundaries
- Arc-rated PPE (FR clothing, face shield, gloves) required within arc flash boundary
- Best protection: de-energize. LOTO eliminates arc flash risk.

11.0 WET CONDITIONS

- GFCI critical in wet conditions. Verify function before use in rain/water.
- Never use electrical equipment while standing in water unless rated and GFCI-protected
- Keep connections out of standing water. Elevate panels above water levels.
- After flooding: qualified electrician inspects before re-energizing

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12.0 GENERATOR SAFETY

- GFCI-protected outlets or portable GFCI on each tool connection
- Ground per NEC 250 and manufacturer instructions
- Never connect to building wiring without transfer switch (backfeed kills utility workers)
- Position outdoors, well-ventilated (CO hazard)
- Refuel only when off and cool

13.0 TRAINING

- All employees: electrical hazard recognition, GFCI testing, cord inspection, overhead line awareness
- Temp electrical workers: GFCI documentation, temporary wiring, grounding
- AEGCP competent person: testing procedures, color-coding, documentation
- Qualified electrical workers: full Subpart K, NFPA 70E, LOTO, arc flash PPE

14.0 RECORDKEEPING

- GFCI Test Logs (Appendix A): project duration + 1 year
- AEGCP Test Records (Appendix B): project duration + 3 years
- Electrical Hazard Assessments (Appendix C): project duration + 3 years
- Training records: duration of employment + 3 years
- Incident reports (shocks, arc flash, line contact): 5 years

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California STATE-SPECIFIC REQUIREMENTS

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APPENDIX C: ELECTRICAL HAZARD ASSESSMENT

Project: _____

Date: _____

Assessed By: _____

Power Source

- Temp service panel: Location ____ Capacity ____ amps
- Generator(s): Qty ____ Size ____ kW GFCI: []Y []N
- Protection: [] GFCI all outlets [] AEGCP

Overhead Lines

- Present: []Y []N Voltage: ____ kV Clearance: ____ ft
- Spotter designated: []Y []N/A

Underground

- 811 locate complete: []Y []N/A
- Hand dig zone identified: []Y []N/A

Wet Conditions

- Standing water: []Y (GFCI critical) []N
- Panels elevated: []Y []N/A

Extension Cords

- All inspected: []Y
- Sizing verified: []Y
- Protected in traffic: []Y []N/A

Hazards: _____

Controls: _____

Assessed By: _____

Date: _____

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