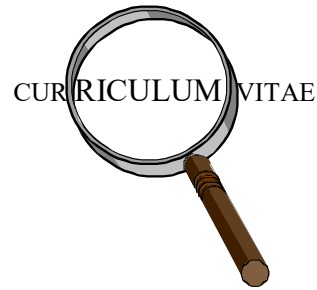


## FORENSIC ELECTRICAL ENGINEER

- CONTRACTOR •
- INVESTIGATOR •
- EXPERT WITNESS •



**Ralph Crawford, P.E.**

**Shocks • Electrocutions • Products  
Fire Cause and Origin • Power Lines and Circuits  
Alarms • Controls • Machinery • Vehicles • Grounding  
National Electrical Code (NEC) • General Order 95**

**Registered Electrical Engineer**, California License E 015115

**B.S., Electrical Engineering**, California State University, Long Beach - 1968

**Electrical Contractor**, California License #360584 C-10 - since 1978

**Construction Arbitrator**, California Contractors State License Board

Member of: **The Society of Forensic Engineers and Scientists**

- 1990-present     **Forensic Electrical Engineer**  
Experience encompasses: electrical safety for users and tradespersons; National Electrical Code (NEC) application; trade practices; grounding; electrically caused fires; power, alarm and control systems; automotive, machinery and appliance electro-mechanical; overhead line construction and clearances; temporary and emergency wiring and generation.
- Sample cases: Elevators; Construction equipment; Design defects; Circuit breaker panel and appliance fires; Utility lines: surges, tree trimming and clearances; Lightning; GFCI; Building Power Systems; Electrician and Consumer Shocks and Electrocutions; Swimming pools; Computer Controlled equipment; Rental equipment.
- Over 600 investigations and 20 depositions; 10 trials.  
50% Plaintiff – 50% Defense
- 1978-2001     **Electrical Contractor, Palo Alto, CA.**  
Design, material specification, installation and repair of all types of electrical systems for a wide variety of clients in commercial, industrial, municipal, military and residential environments.
- 1992             FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), Baton Rouge, LA. Damage assessment inspector in the aftermath of Hurricane Andrew.
- 1973-1978     STANFORD UNIVERSITY MEDICAL CENTER, Engineering and Facilities Department, Palo Alto, CA. **Electrical and Facilities Project Engineer.** Designed, managed and inspected power, control and alarm systems for this ultra high tech facility that included: a 12 kV substation, turbine/diesel emergency power, communications and paging center, fire and equipment alarms, uninterruptable power for heart transplants, laminar flow and biohazard isolation rooms, X-ray department relocation, and safety grounding in electrically susceptible patient areas (ICU and

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Surgery). Provided engineering support for the Mechanical, Electrical and HVAC (Heating, Ventilating & Air-Conditioning) maintenance shops.

- 1971-1972      MINICARS, INC., Goleta, CA. **Project Engineer** for this automobile crash test firm that performed research for the U.S. Department of Transportation. Designed, built and operated the power, control and instrumentation systems for an air bag test sled facility. Special equipment used included: custom magnetic and strip chart recorders, ultra high speed still and motion photography and, the accelerometers and strain gages installed in anthropomorphic dummies.
- 1968-1970      UNITED STATES PUBLIC HEALTH SERVICE, Bureau of Radiological Health, Rockville, MD. **Project Engineer/Commissioned Officer**. Established emission and compliance standards, and conducted research on measurement of low-level Electro-Magnetic radiation at the Government's laboratory. Performed tests at manufacturing plants and user facilities nationwide to assist the Bureau in enforcing its standards for safe emission levels from color televisions, medical x-ray equipment, lasers, microwave ovens and ultrasonic devices.

#### TECHNICAL PAPERS

##### THE AMERICAN ACADEMY OF FORENSIC SCIENCES

- Electrical System Factors in Jack London's 1913 "Wolf House" Fire
- An Overview of the Status of Electro-Magnetic Field (EMF) Hazards
- Properties of Materials Relevant to Forensic Electrical Engineering

##### THE INTERNATIONAL ACADEMY OF FORENSIC SCIENCES

- Fires Caused by Slow Deterioration of Overheated Electrical Insulation

##### THE SOCIETY OF FORENSIC ENGINEERS AND SCIENTISTS

- Spoliation of Evidence in an Itinerant Farm Worker's House Fire
- Flammability Tests of Overloaded House Wiring
- Girl's Hand Burns While Connecting Clothes Iron
- Defective Product Design Considerations
- Analysis of an Unusual House Fire
- Control System Defects in Screw Auger Systems
- Potpourri of Power Line Contacts
- Plating Shop Fire, McClellan Air Force Base
- Broken Utility wire caused house fire
- Alarm wiring for "Floater" farm sprayer crash fatality

Author: ELECTRICAL CONSTRUCTION and MAINTENANCE Magazine

- 11 Articles about the Art and Science of Forensic Electrical Investigations
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