

**CONTACT**

Ralph Crawford, P.E.  
Forensic Electrical Engineer  
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**SPECIALTIES**

Fire Cause and Origin  
Power Wiring and Circuits  
Alarms  
Controls  
Machinery  
Vehicles  
Grounding  
National Electrical Code (NEC)  
General Order 95  
Troubleshooting  
Electrician Trade Practice  
Lock Out / Tag Out

**EDUCATION & CERTIFICATIONS**

Registered Electrical Engineer,  
California License E 15115

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, The Society of Forensic  
Engineers and Scientists

Commercial Driver's License

**EXPERIENCE**

*1991 - 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, 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*

**Damage Assessor**

Federal Emergency Management Agency  
Baton Rouge, LA

Damage assessment inspector for FEMA in the aftermath of Hurricane Andrew

*1973 - 1978*

**Electrical & Facilities Project Engineer**

Stanford University Medical Center  
Palo Alto, CA

Designed, managed and inspected power, control and alarm systems for this ultra high tech facility that included: a 12kV 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 Surgery). Provided engineering support for the Mechanical, Electrical and HVAC (Heating, Ventilating & Air-Conditioning) maintenance shops

1971 - 1972

**Project Engineer**

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

**Project Engineer / Commissioned Officer**

Bureau of Radiological Health  
Rockville, MD

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*

- Pyrolysis: 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

*Electrical Construction and Maintenance Magazine*

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