

# Caltrans Electronics Specialist (Repair Laboratory) Series

## California State Personnel Board Specification

Series established May 4, 1993

### Scope

This series specification describes two levels of electronic repair specialists employed by the State Department of Transportation to execute repairs on a variety of complex electronic devices such as electronic traffic signals, mainframe and toll bridge data collection consoles, video cameras, and the proprietary phone system used by the Division of Maintenance in the Districts.

The duties of both the Caltrans Electrician classification series and the Caltrans Electronics Specialist (Repair Laboratory) classification series include electrical and electronic maintenance and repair work. However, positions in this series differ from those in the Caltrans Electrician series in that Caltrans Electronics Specialist (Repair Laboratory) series' positions are used within Caltrans district repair laboratories performing benchwork repairs down to the microprocessor level while Caltrans Electrician positions are used in the field. The Caltrans Electrician positions' electronic repair activity is limited to the replacement of nonfunctional, complete electronic circuit boards.

Schem Code	Class Code	Class
QO39	6719	Caltrans Electronics Specialist (Repair Laboratory)
QO40	6720	Caltrans Electronics Specialist Supervisor (Repair Laboratory)

Caltrans Electronics Specialist (Repair Laboratory) Series Specification - Class Titles and Codes

### Definition of Levels

#### Caltrans Electronics Specialist (Repair Laboratory)

This is the full journey level. Under general supervision, incumbents independently perform a variety of tasks involving the repair and maintenance of complex electronic devices such as microprocessors for the control of traffic, digital units and minicomputer consoles used to track toll bridge revenues, security cameras, and the Districts' auxiliary telephone system. Incumbents are responsible for troubleshooting complex internal circuits on all electronic devices, closed circuit television equipment, computers and peripherals, and microprocessor based units used by the Division of Maintenance. Incumbents may act as lead to the shop crew in the absence of the supervisor of the shop including preparing reports relating to day-to-day operations.

#### Caltrans Electronics Specialist Supervisor (Repair Laboratory)

This is the working supervisor level. Under general direction, in a repair laboratory, supervises Caltrans Electronics Specialists performing repair and maintenance activities in support of complex electronic devices used in traffic control, toll bridge revenue collection and telephone communication.

### Minimum Qualifications

#### Caltrans Electronics Specialist (Repair Laboratory)

Education: An Associate of Arts Degree in Electronics or completion of at least 33 semester units of electronic courses including AC and DC circuit fundamentals; laboratory practices and techniques; mathematics for AC/DC circuit fundamentals; mathematics for semiconductor theory; semiconductor theory, analog and digital integrated circuit applications; introduction to microcomputers, industrial control and robotics, RF power for

industrial control, and elements of DC circuits. (Proof of completion or transcript of records is required prior to appointment.) and Experience: Four years of work experience at the full journeyman level in electronic, computer, video camera, closed circuit TV, or microprocessor hardware troubleshooting and repair down to the microprocessor level and experience using complex laboratory diagnostic test equipment such as microprocessor emulators, logic analyzers, the oscilloscope, and other digital troubleshooting aids.

## **Caltrans Electronics Specialist Supervisor (Repair Laboratory)**

Education: Same as above. and Either I Experience: Two years in the California state service performing the duties of Caltrans Electronics Specialist (Repair Laboratory).

### **OR II**

Experience: Five years of paid work experience in the field of electronics, performing computer, video camera, or microprocessor hardware troubleshooting using laboratory diagnostic test equipment such as microprocessor emulators, logic analyzers, the oscilloscope, and other digital troubleshooting aids. At least one year of the above experience must have been in a supervisory capacity.

## **Knowledge and Abilities**

### **Caltrans Electronics Specialist (Repair Laboratory)**

Knowledge of: Basic principles of electronics including in-depth knowledge of digital and microprocessor theory; knowledge of software, special numbering systems, and electronic terminology; how to perform circuit board level diagnostics and delicate board repairs; use of test equipment, such as microprocessor emulators, oscilloscopes, logic analyzers, signal generators, timing devices and other equipment used in the repair and servicing of electronic equipment devices.

Ability to: Read and interpret plans, detail drawings and wiring diagrams; maintain records and prepare reports; prepare estimates of cost and other materials and equipment; keep abreast of new technical advances and maintain knowledge and understanding of new electronic circuits; keep accurate records and history of work done on each unit serviced; troubleshoot problems involving complex internal circuit devices and make sound judgments; repair complex electronic circuitry and be resourceful in the repair and analysis of micro-circuit function and analysis; design testing equipment as required; analyze situations accurately and adopt an effective course of action; and establish and maintain effective cooperative relations with those contacted in the line of work.

### **Caltrans Electronics Specialist Supervisor (Repair Laboratory)**

Knowledge of: All of the above, and electrical theory and practice including materials, methods, and equipment used in the installation, construction maintenance and repair of electric and electronic control and other electrical devices; CAL/OSHA safety rules and regulations; electrical safety orders of the Division of Industrial Safety and of the safety precautions required in the installations of electronic control and other electrical devices; the U.S. Coast Guard and Civil Aeronautics Administration rules and regulations pertaining to hazard markers and warning signals; principles of effective supervision; the Department's Affirmative Action Program objectives; a supervisor's role in the Affirmative Action Program and the processes available to meet affirmative action objectives.

Ability to: All of the above, and make difficult and complex installations and repairs and locate the cause of failure; analyze situations accurately and adopt an effective course of action in dealing with complex problems involving the operation and maintenance of minicomputers, tool collection equipment, and other electronic systems; run and interpret diagnostic software required for proper computer circuit troubleshooting and repair; and effectively contribute to the Department's affirmative action objectives.

## **Additional Desirable Qualification**

### **Both Levels:**

Possession of a valid Class C driver license.

## Class History

<b>Class</b>	<b>Date Established</b>	<b>Date Revised</b>	<b>Title Changed</b>
Caltrans Electronics Specialist (Repair Laboratory)	05/04/1993	--	--
Caltrans Electronics Specialist Supervisor (Repair Laboratory)	05/04/1993	--	--

Caltrans Electronics Specialist (Repair Laboratory) Series History - Dates Established, Revised, and Title Changed

Updated 6/3/2012