



**APPROVED BY: THE CHIEF  
ADMINISTRATIVE OFFICER**

**EFFECTIVE: March 2005**

**ASSISTANT ELECTRICAL ENGINEER I/II  
ASSISTANT CONTROL SYSTEMS ENGINEER I/II  
ASSISTANT ENGINEER I/II (CONTROL SYSTEMS/ELECTRICAL)<sup>1</sup>**

<sup>1</sup>*Any incumbent who has not achieved registration as a Professional Control Systems or Electrical Engineer in California will use this generic title, in accordance with the State of California Business and Profession Code.*

*Class specifications are intended to present a descriptive list of the range of duties performed by employees in the class. Specifications are not intended to reflect all duties performed within the job.*

**DEFINITION**

To perform a variety of professional control systems engineering or electrical engineering duties in the design, development, implementation, modification, installation, and maintenance of the District's computer-based process monitoring and control systems and electronic or electrical systems in the area of water production, treatment and distribution, and energy and water conservation; to ensure work quality and adherence to professional codes, standards, and District specifications; and to perform a variety of professional tasks relative to assigned area of responsibility.

**DISTINGUISHING CHARACTERISTICS**

**Assistant Control Systems/Electrical Engineer I**

This is the entry level, training class in the professional Control Systems/Electrical Engineer series. Initially, under immediate supervision, incumbents perform a limited range of professional control systems and electrical engineering duties requiring limited

exercise of judgment. Duties involve using prescribed methods and include specific and limited portions of a broader assignment of an experienced engineer in areas such as design, development, implementation, modification, installation, and maintenance of the District's computer-based process monitoring and control systems, and electronic or electrical systems. As experience and proficiency are gained, assignments become more diversified and difficult with increasing independence of judgment. Since this class is typically used as a training class, employees may have only limited or no directly related work experience. This class is alternatively staffed with Assistant Control Systems/Electrical Engineer II, and incumbents may advance to the higher level after gaining experience and demonstrating proficiency.

### **Assistant Control Systems/Electrical Engineer II**

This is the experienced level class within the professional Control Systems/Electrical Engineer series. Incumbents in this class work under general supervision and may be assigned specific projects with minimal supervision; additionally, incumbents may direct the work of engineers, draftspersons, technicians, and others who assist in specific project assignments. Work is reviewed for application of sound professional judgement and close supervision is provided whenever new aspects or types of work are assigned. Typical duties and responsibilities require knowledge of principles and techniques commonly employed in the specific area of assignment. As experience is gained, incumbents are assigned more complex or difficult work that involves conventional types of plans, investigations, surveys, structures, or equipment with relatively few complex features for which there are precedents. Additionally, incumbents may occasionally be provided the opportunity to lead smaller, short term projects or studies of limited scope. Positions in this class are flexibly staffed and are normally filled by advancement from the "I" level, or when filled from the outside, have prior experience.

## **SUPERVISION RECEIVED AND EXERCISED**

### **Assistant Control Systems/Electrical Engineer I**

Receives immediate supervision from higher level supervisory or management staff.

### **Assistant Control Systems/Electrical Engineer II**

Receives general supervision from higher level supervisory or management staff.

As assigned, may provide technical supervision over engineering project staff.

## **ESSENTIAL FUNCTION STATEMENTS**

*Essential responsibilities and duties may include, but are not limited to, the following:*

1. Perform a variety of professional control systems and electrical engineering duties in the planning, design, development, implementation, modification, operation, and maintenance of the District's computer-based process monitoring and control systems, and electronic and electrical systems in the area of water production, treatment and distribution, and energy and water conservation; ensure adherence to professional standards, codes, and District specifications.
2. Conduct various studies and analyses related to electrical and computer-based process control information and control systems applications in such areas as water production, treatment and distribution, energy and water conservation.
3. Assist in the preparation of control systems and electrical engineering specifications, drawings, sketches, and other supporting documentation for proposed projects; review drawings, plans, and other work submitted by external consultants, engineers, and contractors for conformance with specifications and District standards; draft and prepare technical and administrative correspondence and reports.
4. Perform engineering calculations and prepare cost estimates for proposed project design and installation work.
5. Participate in various engineering studies and related projects with District staff, outside agencies, and consultants ensuring that deadlines, standards, and specifications are met appropriately.
6. Collect, compute, and compile engineering data, statistics, and surveys; conduct field, in-plant, and office engineering studies related to the research, planning, design, construction, operation, and maintenance of flood control and water supply facilities such as channels, culverts, bridges, roads, retaining walls, pipelines, dams, treatment plants, fishways, and appurtenant structures.
7. Provide support to District control systems and electrical engineering installation projects; assist in the inspection of contractor installations as necessary; provide technical support during project installation including design changes, submittal review, request for information from contractors and installers, interpretation of contract documents, and assistance with change orders.
8. As assigned, perform control systems network administration duties; configure, program, test, install, and maintain networked control systems; connect peripherals to system; monitor system integrity; provide technical hardware and software support to users; identify, diagnose, and resolve technical problems.

9. Participate in the design or modification of computer programs for the solution of data acquisition, control, and operations problems; prepare technical documentation and develop procedures for control systems hardware and software.
10. Serve as technical resource on electrical and control systems problems in District plants and facilities; provide direction to operations and maintenance staff on problem resolution; conduct specialized electrical and control systems review studies; develop cost-benefit analyses and make recommendations on engineering solutions.
11. Analyze and troubleshoot electronic, electrical, instrumentation, and control system hardware, software, components, and circuits; repair or arrange for repair as required.
12. Develop and review electrical control and telemetry system tests utilizing specialized test equipment; conduct field and facilities investigations to monitor system efficiency and operations.
13. Participate in the evaluation, testing, and selection vendor products including instrumentation, electrical distribution, and telemetry systems.
14. May participate in the consultant selection process; assist in administration of consultant and professional service contracts; participate in the negotiation of applicable agreements with other agencies/entities, as assigned.
15. Develop and maintain various databases and computer files and use engineering software or develop programs to solve specific engineering programs.
16. Review statutes and regulations; interpret and apply the regulations with respect to District compliance; develop compliance strategies for regulations; may analyze proposed regulations.
17. Confer with District staff, contractors, the public, and other agencies or organizations as needed regarding assigned work.
18. Perform related duties and responsibilities as required.

## **QUALIFICATIONS**

### **Assistant Control Systems/Electrical Engineer I**

#### *Knowledge of:*

Principles and practices of electrical and control systems engineering.  
Engineering mathematics and economics.

Electronic and electrical system methods, materials, and equipment.  
Methods and techniques of statistical analysis.  
Operational characteristics of specialized test equipment used to diagnose and troubleshoot control and electrical systems malfunctions.  
Local, State, and national electrical and control system codes, standards, and practices.  
Principles and practices of control systems network administration.  
Operational characteristics of control systems hardware and software.  
Operational characteristics of local area networks and supporting platforms.  
Electrical, electronic, and solid State circuitry engineering principles and practices.  
Computer programs and languages and their engineering applications.  
Pertinent Federal, State, and local laws, codes, and regulations.

*Ability to:*

Apply principles and practices of control systems and electrical engineering in assigned projects.  
Perform accurate engineering calculations.  
Apply engineering principles and computer programs to the solution of engineering problems.  
Conduct various engineering studies and analyze to recommend engineering solutions.  
Inspect and test electrical and control systems equipment.  
Prepare and interpret drawings, graphs, plans, and specifications.  
Perform control systems network administration duties.  
Prepare a variety of technical and administrative reports and documents.  
Exercise sound judgment within procedural guidelines.  
Understand and apply Federal, State, and local policies, laws, and regulations as related to assigned projects.  
Communicate clearly and concisely, both orally and in writing.  
Establish and maintain effective working relationships with those contacted in the course of work.

*Experience and Training Guidelines*

Any combination of experience and training that would likely provide the required knowledge and abilities is qualifying. A typical way to obtain the knowledge and abilities would be:

Experience

No experience is necessary.

## Training

Equivalent to a Bachelors degree from an accredited college or university with major course work in control systems engineering, electrical engineering, or a related field;

## OR

Possession of a valid California Engineer-in Training (EIT) certificate with two years of associated paraprofessional engineering experience.

## **License or Certificate**

Registered positions within this classification must possess registration as a professional Control Systems Engineer or Electrical Engineer in the State of California.

Possession of, or ability to obtain, an appropriate, valid California driver's license may be required with determinations made on a case by case basis at the time of job posting.

## **Assistant Control Systems/Electrical Engineer II**

In addition to the qualifications for Assistant Control Systems/Electrical Engineer I:

### *Knowledge of:*

Operations, services, and activities of a comprehensive control system and electrical engineering including computer-based process information and control, electronic and electrical systems in the area of water production, treatment, and distribution and energy and water conservation.

Principles and practices utilized in the design, application, and modification of a variety of electrical, process monitoring, process control, and related computer-based systems, instrumentation and equipment.

Principles and practices of control systems and electrical engineering design and installation.

Control systems and electrical engineering theory and design concepts for process control, electronic and electrical systems.

Principles and practices of control systems and electrical engineering project cost estimating.

Geographic Information System (GIS) uses and applications.

Principles and practices of site surveying as it relates to control systems and electrical engineering project installation.

Terminology, methods, practices, and techniques used in technical engineering

report preparation.

*Ability to:*

Prepare and review control systems and electrical engineering designs, drawings, specifications, and other engineering project documentation.

Conduct various engineering studies and analyze results.

Design and modify various electrical, electronic, and control systems.

Analyze control systems and telemetry system requirements and recommend engineering solutions.

Prepare a variety of engineering studies and reports.

Communicate project goals and objectives to members of the public.

Provide technical support to assigned staff.

Prepare schedules and budgets for assigned projects.

Interpret and apply Federal, State, and local policies, laws, and regulations as related to assigned projects.

*Experience and Training Guidelines*

Any combination of experience and training that would likely provide the required knowledge and abilities is qualifying. A typical way to obtain the knowledge and abilities would be:

Experience

Two years of professional engineering experience at a level equivalent to that of the Assistant Engineer I (Control Systems/Electrical) classification.

OR

Possession of a valid California Engineer-in-Training (EIT) Certificate with two years of associated paraprofessional engineering experience.

Training

Equivalent to a Bachelors degree from an accredited college or university with major course work in control system engineering, electrical engineering or a related field.

**License or Certificate**

Registered positions within this classification must possess registration as a professional Control Systems Engineer or Electrical Engineer in the State of California.

Possession of, or ability to obtain, an appropriate, valid California driver's license may be required with determinations made on a case by case basis at the time of job posting.

## **WORKING CONDITIONS**

### **Environmental Conditions**

Indoor environment; some positions require frequent field visits; travel from site to site; work closely with others and alone; exposure to computer screens; irregular work hours; some positions may involve exposure to inclement weather, dust, dirt, noise, and other conditions associated with construction sites.

### **Physical Conditions**

Essential and other important functions may require maintaining physical condition necessary for sitting, walking, and standing for extended periods of time; occasional moderate lifting and carrying.