

POSITION DUTY STATEMENT

DOT PM-0924 (REV 01/2025)

CLASSIFICATION TITLE Transportation Engineer (Elect)	OFFICE/BRANCH/SECTION 02/Maint & Operations/Traffic Operations	
WORKING TITLE Transportation Engineer/Electrical	POSITION NUMBER 902-365-3609-XXX	REVISION DATE

As a valued member of the Caltrans team, you make it possible to improve lives and communities through transportation.

GENERAL STATEMENT:

Under the direction of the Senior Transportation Engineer for Traffic Engineering & Operations, the incumbent participates in fulfilling the duties of Electrical Design and Project Engineer within this office. In this capacity, the incumbent prepares/reviews Plans, Specifications, and Estimates for project development and encroachment permit projects that include electrical facilities. Incumbent also provides technical support during construction of these facilities. In addition, prepares or assists in the preparation of project documents including, expenditure authorizations, survey requests, project reports, cooperative agreements or other reports necessary for projects.

CORE COMPETENCIES:

As a Transportation Engineer (Elect), the incumbent is expected to become proficient in the following competencies as described below in order to successfully perform the essential functions of the job, while adhering to and promoting the Department's Mission, Vision, Values, Strategic Imperatives and Goals. Effective development of the identified Core Competencies fosters the advancement of the following Leadership Competencies: Change Commitment, Risk Appetite, Self-Development/Growth, Conflict Management, Relationship Building, Organizational Awareness, Communication, Strategic Perspective, and Results Driven.

- Learning on the Fly:** Learns quickly, is open to change, experiments, and is flexible. (Equity - Innovation)
- Decision Making:** Makes critical and timely decisions. Takes charge. Supports appropriate risk. Makes challenging and appropriate decisions. (Employee Excellence - Pride)
- Initiative:** Ability to identify what needs to be done and doing it before being asked or required by the situation. Seeks out others involved in a situation to learn their perspectives. (Safety - Collaboration)
- Problem-solving and Decision-making :** Identifies problems and uses logical analysis to find information, understand causes, and evaluate and select or recommend best possible courses of action. (Climate Action - People First)
- Relationship Building:** The ability to develop and maintain internal and external trust and professional relationships, which includes listening and understanding to build rapport. (Climate Action - Integrity)
- Organizational Awareness:** Contributes to the organization by understanding and aligning actions with the organization's strategic plan, including the mission, vision, goals, core functions, and values. (Prosperity - Pride)
- Interpersonal Effectiveness :** Effectively and appropriately interacts and communicates with others to build positive, constructive, professional relationships. Tailors communication style based on the audience. Provides and is receptive to feedback. (Prosperity - Collaboration)
- Planning and Results Oriented:** Organizes and executes work to meet organizational goals and objectives while meeting quality standards, following organizational processes, and demonstrating continuous commitment. (Employee Excellence - Pride)
- Computer literacy and application:** Appropriate knowledge of computer applications and other tools necessary to successfully perform tasks. (Prosperity - Stewardship)

TYPICAL DUTIES:

Percentage Essential (E)/Marginal (M) ¹	Job Description
35% E	Prepare or assist in the development of electrical design products, including project plans, specifications and estimates using standard computer aided design techniques. Applications include roadway and area lighting systems, traffic signal control systems, traffic monitoring and field data collection and processing systems, fiber optic and other communication systems, and Intelligent Transportation Systems (ITS) elements. Integrate specific technologies such as Changeable Message Sign (CMS) systems, Roadside Weather Information System (RWIS), Highway Advisory Radio (HAR) and Video Image Processing Systems (VIPS) and other electrical and electronic systems to deliver complete Plans, Specifications and Estimate (PS & E) package. Assist in the development and operation of electrical and electronic systems, including software, and inspect the installation of electrical and electronic materials and equipment.

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20%	E	Prepares and reviews plans, specifications, and estimates for North Region Design for traffic signal systems, flashing beacon systems, highway lighting, and traffic census installations. Coordinates with utility companies for electrical service to establish electrical facilities on State Routes. Communicates changes or additions to existing signal and lighting maintenance agreements to the District Maintenance Engineering Office.
15%	E	Prepare or assist in the preparation of project documents including, expenditure authorizations, survey requests, project reports, and cooperative agreements, correspondence. May serve as Project Engineer when scope is predominantly electrical work.
10%	E	Make field investigations, study physical characteristics of project limits. Collect engineering data (conduit sizes, power supply, and other survey features) to aid in location of electrical equipment. Review site for improvements required for safe and convenient access by maintenance and for constructibility of the project.
10%	E	Coordinates with utility providers, project engineers, and internal stakeholders to plan, secure, and manage electrical power supply for new transportation infrastructure installations. This includes assessing project power needs, initiating and finalizing service requests, reviewing load calculations, ensuring timely energization, and resolving potential conflicts between construction schedules and utility requirements. The incumbent monitors progress, maintains documentation, and ensures all power-related activities comply with departmental standards, safety requirements, and utility regulations to support successful project delivery.
10%	M	Review and consult with district Traffic, Traffic Management Center (TMC) and Intelligent Transportation System (ITS) personnel for selection of electrical and electronic equipment used in project plans and specifications. Propose new technology as appropriate. Coordinate and act as liaison with Headquarters to implement and evaluate said new technology when it is included in a project. Assist in the development and operation of electrical and electronic systems, including software, and inspect the installation of electrical and electronic materials and equipment.

¹ESSENTIAL FUNCTIONS are the core duties of the position that cannot be reassigned.
MARGINAL FUNCTIONS are the minor tasks of the position that can be assigned to others.

SUPERVISION OR GUIDANCE EXERCISED OVER OTHERS
No supervisor responsibilities; may act as lead.

KNOWLEDGE, ABILITIES, AND ANALYTICAL REQUIREMENTS
Possession of a valid Certificate of Registration as a Electrical Engineer is desirable, but not required. Graduation from a four-year curriculum in electrical/electronic engineering from an ABET accredited university is required. (Possession of a valid certificate as an Engineer-in-Training issued by the California State Board of Registration for Professional Engineers and Land Surveyors may be substituted for the required education). Must have knowledge of the following:

- Principles and practices of electrical engineering.
- Design and construction of highway lighting and traffic control systems, including electrical/electronic theory and instrumentation for physical testing and research.
- Power and lighting distribution systems.
- Modern highway lighting and traffic control equipment and apparatus.
- Computer software applicable to traffic operations, traffic signal operation, and traffic signal monitoring.
- Engineering mathematics.
- Effects of weather and time on electrical and electronic equipment, lighting devices, and their operation.
- The Department's safety and health policies and procedures, including the California Code of Regulations, Title 8 Industrial Regulations, Safety Orders, Code of Safe Practices, and Safety Manual.
- Operation and timing of traffic signals including fixed time and traffic actuated systems.
- Intelligent Transportation Systems (ITS) components and their use.
- Computers and their use.
- Caltrans Injury and Illness Prevention Program.
- Department Policies and Procedures.

Ability to:

- Inspect the installation and operation of highway electrical components and recommend revisions.
- Read and understand highway plans, drawings, and field data which relate to highway lighting and traffic control devices.
- Prepare and review complex plans, cost estimates, and specifications for electrical projects.

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- Perform engineering calculations to substantiate conclusions.
 - Evaluate and implement utility relocation plans and reports.
 - Analyze situations accurately and take effective action.
 - Correlate plans, designs, drawings, and data with physical conditions.
 - Prepare correspondence and detailed reports. Excellent writing skills required.
 - Establish and maintain friendly and cooperative relations with those contacted in the course of the work.
 - Follow directions and work independently.
 - Correspond professionally, effectively, orally and in writing, with other Caltrans functional offices, local agencies, and the general public.
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RESPONSIBILITY FOR DECISIONS AND CONSEQUENCES OF ERROR

Incumbent is responsible for decisions necessary to complete the specific job assignments listed above. The consequences of poor decisions and/or inaction could include the following: adverse affects to the form, function, and safety of highway facilities; projects not delivered within required time frames; resources expended on proposals which do not meet minimum criteria; less than optimum traffic signal operation service to the public; insufficient information for managers to schedule and monitor program activities; incorrect costs applied to developers, local agencies or to the State; and additional costs and/or time delays to encroachment permits and construction projects.

PUBLIC AND INTERNAL CONTACTS

Contact with the public will be occasional, primarily through phone and written contact, with occasional public presentations. Some presentations will be after normal working hours.

This position will require extensive contact within the District and North Region, including Design, TMC, ITS, Environmental, Office Engineer, Program Management, Right of Way, Advanced Planning, Construction, Permits, and Maintenance. Contact with Headquarters Traffic will be required on a regular basis.

Contact will be required with local government, city, county, private engineering consultants, and other State agencies concerning plan reviews, contracted projects, and electrical maintenance agreements. The employee will occasionally contact industry representatives to transmit or obtain relevant engineering information. Contact with electrical utility suppliers will be common.

PHYSICAL, MENTAL, AND EMOTIONAL REQUIREMENTS

Incumbent will be required to use personal computers and telephones for long periods of time. Other physical activities will include regular fieldwork, lifting up to 50 pounds, light construction type activities, and occasional driving for long periods. Incumbent may be required to travel in state, but the travel is not very frequent.

Incumbent will be required to sustain mental activity needed for report writing, problem solving, researching, analysis and reasoning, and participating in meetings.

Incumbent will be required to develop and maintain cooperative working relationships; respond appropriately to difficult situations; recognize emotionally charged issues or problems; and display empathy to others.

Employee must have the ability to refrain from insubordination, follow supervisor's instructions, get along with supervisors and co-workers, avoid violent behavior, understand and follow Caltrans policies, and avoid disruptive or harassing behavior.

WORK ENVIRONMENT

At their base operation, incumbent will work in a climate-controlled office under artificial lighting. Incumbent will be required to traverse office complexes, parking lots, equipment repair shops, highways, sidewalks, roadside cut and fill slopes, and drainage facilities. Incumbent will be required to travel and work outdoors on occasion and may be exposed to dirt, chemicals, noise, uneven surfaces, extreme heat, extreme wet conditions, and extreme cold.

TELEWORK - This position may be allowed to telework from home in addition to office work at an assigned location. The amount and availability of telework and/or office work will be determined by the Department based on the functions of each position.

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I have read, understand and can perform the duties listed above. (If you believe you may require reasonable accommodation, please discuss this with your hiring supervisor. If you are unsure whether you require reasonable accommodation, inform the hiring supervisor who will discuss your concerns with the Reasonable Accommodation Coordinator.)

I agree that by providing my electronic signature for this form, I agree to conduct business transactions by electronic means and that my electronic signature is the legal binding equivalent to my handwritten signature. I hereby agree that my electronic signature represents my execution or authentication of this form, and my intent to be bound by it.

EMPLOYEE (Print)

EMPLOYEE (Signature)	DATE
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I have discussed the duties with, and provided a copy of this duty statement to the employee named above.

SUPERVISOR (Print)

SUPERVISOR (Signature)	DATE
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