

POSITION DUTY STATEMENT

DOT PM-0924 (REV 01/2025)

CLASSIFICATION TITLE Transportation Engineer (Elect)	OFFICE/BRANCH/SECTION District 11/Traffic Safety & Ops-Transportation Mgmt. Center	
WORKING TITLE Transportation Electrical Engineer	POSITION NUMBER 911-350-3609-XXX	REVISION DATE 10/20/2025

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 Electrical Engineer, Supervisor (Construction Electrical Engineer, Branch Chief), the Transportation Engineer, Electrical (Transportation Electrical Engineer) performs a wide variety of professional electrical and electronic engineering duties in support of the Traffic Safety & Operations Division-Transportation Management Center (TMC) within the Electrical Construction Branch. The incumbent is responsible for the planning, design, construction, maintenance, and inspection of electrical and electronic systems used in transportation management and traffic operations.

As the incumbent progresses in experience, assignments become progressively more complex and may function as a lead person over the activities of various electrical and electronic engineering and technical personnel.

Appointment to Range D requires possession of a valid certificate of registration as an electrical engineer issued by the California State Board of Registration for Professional Engineers and Land Surveyors.

Appointment to this position requires passing the Department of Justice (DOJ) background check.

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.

- **Creativity and Innovation:** Thinks beyond the confines of traditional models to recognize opportunities, seek creative solutions and take intelligent risks. (Safety, Climate Action, Employee Excellence - Collaboration, Equity, Innovation, Integrity, Pride, Stewardship)
- **Decision Making:** Makes critical and timely decisions. Takes charge. Supports appropriate risk. Makes challenging and appropriate decisions. (Safety, Equity, Climate Action, Employee Excellence - Collaboration, Equity, Innovation, Integrity, Pride, Stewardship)
- **Ethics and Integrity:** Demonstrated concern to be perceived as responsible, reliable, and trustworthy. Respects the confidentiality of information or concern shared by others. Honest and forthright. Conforms to accepted standards of conduct. (Safety, Equity, Employee Excellence - Collaboration, Equity, Innovation, Pride)
- **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. (Safety, Equity, Climate Action, Employee Excellence - Collaboration, Equity, Innovation, Integrity, Pride, Stewardship)
- **Teamwork and Collaboration:** Sets team structure. Organizes, leads, and facilitates team activities. Promotes team cooperation and encourages participation. Capable of cross functionality and working well with others on a team to achieve personal goals, team goals, and organizational goals. Takes responsibility for individual actions in order to achieve consistent results. (Safety, Climate Action, Employee Excellence - Collaboration, Equity, Innovation, People First, Pride, Stewardship)
- **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. (Safety, Equity, Employee Excellence - Collaboration, Equity, Innovation, Integrity, Pride, Stewardship)
- **Communication:** Expresses oneself clearly in all forms of communication. Gives feedback and is receptive to feedback received. Knows that listening is essential. Keeps others in the Division and other functional units informed as appropriate. (Safety, Climate Action, Employee Excellence - Collaboration, Equity, Innovation, Integrity, Pride, Stewardship)
- **Analytical Skills:** Approaches problems using a logical, systematic, and sequential approach. Weighs priorities and recognizes underlying issues. (Safety, Employee Excellence - Collaboration, Equity, Innovation, Integrity, Pride, Stewardship)
- **Thoroughness:** Ensures that work and information is complete and accurate. Ensures that assignment goals, objectives, and completion dates are met. Documents and reports on work progress. (Safety, Climate Action, Employee Excellence - Collaboration, Equity, Innovation, Integrity, Pride, Stewardship)

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TYPICAL DUTIES:

Percentage Essential (E)/Marginal (M) ¹	Job Description
35% E	FIELD INSPECTION Performs field inspections of contractors' electrical and electronic State Highway Operation and Protection Program (SHOPP), State Transportation Improvement Program (STIP), and maintenance projects during and after construction to ensure compliance with plans, specifications, cost estimates, utility agreements, safety codes, and applicable regulations. Analyzes field conditions and recommends engineering design revisions or contract change order as needed for highway lighting, traffic signals, communications systems, Middle Mile Broadband Network, and other transportation-related electrical systems. Prepares, reviews, and consolidates field reports and documentation to ensure consistency, accuracy, and compliance with departmental procedures and quality standards. Prepares and verifies field quantity calculations to support monthly contractor payments and ensures accuracy, completeness, and compliance with project documentation standards. Reviews contractor submittal and conducts analysis of materials, equipment, and labor costs to confirm adherence to contract requirements and cost-effectiveness. Documents and updates as-built conditions for constructed facilities to maintain accurate project records and ensures future maintenance and asset management needs are met. Collaborates with multidisciplinary teams to resolve field issues, coordinate project activities, and ensures timely project delivery.
35% E	PROJECT IMPLEMENTATION Performs electrical calculations, evaluates design alternatives, and applies engineering judgment to develop and review transportation electrical system designs. Demonstrates the ability to read and understand electrical and electronic design plans using Computer-Aided Design and Drafting(CADD), computer applications, stand-alone interactive systems, and other engineering tools. Prepares cost estimates and project documentation to support the development and delivery of projects that meet Caltrans standards, specifications, and quality objectives. Provides technical support to the Highway Maintenance-4 (HM4) TMS and Minor B Program electrical and electronic projects and ensures design, constructability, and compliance with project requirements are maintained throughout all phases of delivery. Analyzes situations effectively and applies sound engineering principles to take effective action for transportation facilities, traffic management systems, and electrical system design concepts. Prepares technical documentation, specifications, correspondence, reports, and presentations to effectively communicate project status, findings, and recommendations. Prepares and maintains project documentation, including meeting minutes and project files to ensure accurate records and effective project tracking.
15% E	COORDINATION Represents the Branch's interest in pre-construction meetings to establish priorities, identify potential challenges, and ensure electrical components are coordinated within project schedules. Participates in weekly construction project meetings to monitor project progress, identify and resolve technical and coordination issues, and address potential bottlenecks impacting delivery timelines. Coordinates signal turn-on and shutdown activities with Signal Operations and Electrical Maintenance units to ensure safe, timely, and compliant system transitions. Coordinates with Resident Engineers and other functional units to support troubleshooting, field modifications, and timely resolution of electrical and electronic system issues. Collaborates with teams, contractors, and other stakeholders to ensure successful project execution, adherence to plans, specifications, and standards, and timely project delivery.
10% E	QUALITY CONTROL AND PROJECT REVIEW Facilitates, schedules, and participates in quality control and constructability reviews, safety review meetings, and value analysis studies to ensure project quality, safety, and cost effectiveness. Responds to inquiries, complaints, and maintenance concerns and assists in claims evaluation and resolution and pending litigation. Maintains knowledge of current developments, emerging technologies, standards, and best practices in electrical and electronic engineering as they relate to transportation and traffic management-related systems to ensure effective application of modern engineering methods. Attends training, meetings, and public workshops to stay informed on current policies, procedures, and emerging technologies.

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5%	M	OTHER RELATED RESPONSIBILITIES Provides support to various active projects, special studies, and technical reviews. Provides backup support to team members during absences to maintain continuity of operations. Performs other related duties as assigned to support Branch and Division needs.
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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
This position does not supervise other staff. However, the incumbent may act as a lead person over the activities of various electrical engineers and electrical technician personnel.

KNOWLEDGE, ABILITIES, AND ANALYTICAL REQUIREMENTS
KNOWLEDGE REQUIREMENTS:

- Electrical and electronic engineering principles, theories, techniques, methods, and standard practices related to the design, construction, operation, and maintenance of transportation-related electrical and electronic systems.
- Modern electrical and electronic equipment, materials, tools, and construction methods used in transportation electrical facilities.
- Computer systems and operations, including CADD, engineering software, computer applications, databases, and project management tools.
- Electrical and electronic diagnostic, troubleshooting, and testing techniques used to identify and resolve system malfunctions in traffic management systems.
- Construction methods, inspection procedures, and quality control standards applicable to electrical projects.
- Asset management systems and databases used to track, monitor, and manage electrical projects and equipment.
- Mathematics and physics principles applicable to electrical engineering calculations, circuit analysis, and cost estimating.
- Occupational safety and health regulations governing the design and installation of electrical and electronic equipment, including the National Electric Code and Title 8 Industrial Relations, Electrical Safety Orders of the Division of Occupational Safety and Health, and other applicable state, federal, and industry standards codes and specifications.

ABILITY REQUIREMENTS:

- Perform electrical and electronic engineering design work using CADD and other engineering tools and technologies.
- Make neat, accurate, and complete engineering drawings and perform calculations.
- Inspect and evaluate electrical installations and construction work for conformance with approved plans, codes, specifications, and standards.
- Read, understand, and apply electrical drawings, electrical diagrams, highway plans, and technical specifications related to transportation electrical and electronic systems.
- Prepare clear, concise, and effective reports, correspondence, documentation, and presentations.
- Establish and maintain cooperative and professional working relationships with Caltrans staff, contractors, consultants, local agencies, the public, and other stakeholders.
- Prioritize and manage multiple assignments and meet project schedules and deadlines.
- Adapt to changes in technology, procedures, and codes in the electrical and transportation engineering fields.
- Communicate effectively, both verbally and in writing, to convey information clearly and accurately.

ANALYTICAL REQUIREMENTS:

- Evaluate engineering data and field conditions to identify issues and recommend effective solutions.
- Interpret and apply applicable laws, regulations, codes, policies, and standards to ensure compliance in all phases of project design, construction, and maintenance.
- Analyze situations accurately and take effective action.
- Balance multiple and competing priorities while maintaining focus.
- Analyze situations accurately and take effective action.

RESPONSIBILITY FOR DECISIONS AND CONSEQUENCES OF ERROR
The incumbent is responsible for exercising engineering judgment and making accurate electrical and engineering calculations to ensure compliance with standards, policies, and applicable codes. This position must evaluate technical issues, determine appropriate action to resolve issues effectively. Errors in judgment, calculations, or documentation may result in unnecessary change orders, project delays, construction rework, increased costs, or disputes and claims. Inaccurate or incomplete design decisions could compromise system performance or safety, leading to exposure or adverse impacts on the traveling public and project stakeholders.

PUBLIC AND INTERNAL CONTACTS
The incumbent must establish and maintain professional, effective, and cooperative working relationships with those contacted during the course of the work, including regional and District functional units, contractors and their employees, local agencies and officials, regulatory agencies, utility companies, engineering consultants, developers, and public stakeholders. These interactions, conducted both verbal and in writing are essential for exchanging information, coordinating projects, and ensuring timely and

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successful delivery of projects.

PHYSICAL, MENTAL, AND EMOTIONAL REQUIREMENTS

The incumbent uses a keyboard, mouse, and video display monitor, stays stationary for prolonged periods, and may be required to move large or cumbersome reports from one location to another, including equipment and materials that can weigh up to 50 pounds. While working in a field environment, the incumbent may be required to drive long distances and move on uneven terrain.

Mental requirements include, but are not limited to, simultaneously working on several assignments and deadlines, working within a noisy and occasionally distracting work environment, and evaluating and understanding critical calculations, data, and other material that may require long periods of mental concentration.

Emotional requirements include, but are not limited to, effective personal interaction skills and the ability to effectively deal with others in various situations, deal with situations calmly and respectfully, and maintain composure in the face of confrontation and highly charged emotional situations. The incumbent must have the emotional ability to maintain a positive, customer service-oriented attitude, resolve emotionally charged issues reasonably and diplomatically, develop and maintain cooperative working relationships with all contacts, and be receptive to change and new information.

WORK ENVIRONMENT

Work environment is both indoors and in the field. While working indoors in an office setting, the incumbent works in a climate-controlled environment with artificial lighting. Multi-floored buildings are equipped with elevators and stairs. For outdoor field work activities, the incumbent may be exposed to variable traffic conditions, dirt, dust, chemicals, loud noise, uneven surfaces, and severe weather conditions. The incumbent must be aware and comply with field safety procedures when working in the field. Travel throughout the District is required, which includes San Diego and Imperial Counties. Possession of a valid driver's license is required to operate a State-owned or leased vehicle. Working at night and overtime may be required.

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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