

POSITION DUTY STATEMENT

DOT PM-0924 (REV 01/2025)

|                                                         |                                                                                      |                             |
|---------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------|
| CLASSIFICATION TITLE<br>Transportation Engineer (Elect) | OFFICE/BRANCH/SECTION<br>Office of Systems Development/Mobility Systems Applications |                             |
| WORKING TITLE<br>Embedded Systems Engineer              | POSITION NUMBER<br>913-350-3609-917                                                  | REVISION DATE<br>02/02/2026 |

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 Branch Chief of Mobility Systems Applications, a Senior Transportation Electrical Engineer (Supervisor), the incumbent, a Transportation Engineer (Electrical), serves as the Embedded Systems Engineer in the Mobility Systems Applications Branch.

The incumbent provides engineering support, contract and project management support, and technical support for Intelligent Transportation System (ITS) projects and develops software programs used to control and monitor the department's traffic signals and ramp meters.

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.

- Managing Change:** Demonstrating support for organizational changes needed to improve the department's effectiveness; supporting, initiating, sponsoring and implementing change. (Safety, Equity, Climate Action, Prosperity, Employee Excellence - Collaboration, Equity, Innovation, Integrity, People First, Pride, Stewardship)
- Decision Making:** Makes critical and timely decisions. Takes charge. Supports appropriate risk. Makes challenging and appropriate decisions. (Safety, Equity, Climate Action, Prosperity, Employee Excellence - Collaboration, Equity, Innovation, Integrity, People First, Pride, Stewardship)
- Reliability:** Ability to demonstrate dependability in meeting commitments, and providing a consistent work product. Takes responsibility for individual actions in order to meet deadline demands. (Safety, Equity, Climate Action, Prosperity, Employee Excellence - Collaboration, Equity, Innovation, Integrity, People First, Pride, Stewardship)
- 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, Prosperity, Employee Excellence - Collaboration, Equity, Innovation, Integrity, People First, 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, Equity, Climate Action, Prosperity, Employee Excellence - Collaboration, Equity, Innovation, Integrity, 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, Climate Action, Prosperity, Employee Excellence - Collaboration, Equity, Innovation, Integrity, People First, 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, Equity, Climate Action, Prosperity, Employee Excellence - Collaboration, Equity, Innovation, Integrity, People First, Pride, Stewardship)
- Analytical Skills:** Approaches problems using a logical, systematic, and sequential approach. Weighs priorities and recognizes underlying issues. (Safety, Equity, Climate Action, Prosperity, Employee Excellence - Collaboration, Equity, Innovation, Integrity, People First, Pride, Stewardship)
- Technical Expertise:** Depth of knowledge and skill in a technical area. (Safety, Equity, Climate Action, Prosperity, Employee Excellence - Collaboration, Equity, Innovation, Integrity, People First, Pride)

TYPICAL DUTIES:

Percentage  
Essential (E)/Marginal (M)<sup>1</sup> Job Description

POSITION DUTY STATEMENT

DOT PM-0924 (REV 01/2025)

|     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30% | E | Provides advanced technical support and software development for district traffic signal and ramp metering systems, including system design, integration, and project management activities. Supports software installation, configuration, validation, and quality-assurance testing; develops troubleshooting procedures and resolves system defects. Designs, develops, and enhances embedded software applications that control traffic signal and ramp metering equipment; implements new features and system improvements. Ports and adapts software across multiple operating platforms (e.g., OS-9 to Linux) to ensure long-term system maintainability and compatibility. Supports hardware components, network communications, and other electronic/electrical systems such as Simple Network Management Protocol (SNMP) used throughout ITS and transportation infrastructure.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 25% | E | Provides engineering support for computer hardware, software, and networking systems that enable ITS within district Traffic Management Centers (TMCs) and across roadside field deployments. Coordinates and deploys ITS field elements statewide in collaboration with district engineers, TMC operations staff, Information Technology (IT) personnel, and consultants. Supports the development, testing, and integration of connected vehicle applications. Assists in implementing cybersecurity measures, conducting threat and vulnerability analyses, and supporting physical security strategies to deter theft, vandalism, and unauthorized access to ITS assets.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 20% | E | Provides technical support for the contracts associated with the Traffic Signal Management and Surveillance System (TSMSS) and the Universal Ramp Meter System (URMS-RC). Approves products and services and ensures contracts provide products and services that are compliant with contract specifications and scope of work. Ensures compliance with contract provisions, monitors contract progress per project schedule, monitors expenditures, authorizes payments, and works with program administrative staff to close out contracts. Conducts functional testing of new software releases, evaluates system performance, and identifies defects or integration issues. Analyzes, documents, and validates communication protocols for devices interfacing with the model 2070 controller programs. Designs interfaces between field hardware and communications infrastructure involving traffic controllers, intelligent transportation cabinets, fiber optics, wireless, leased lines, modems and other communications technology. Installs and configures system software for traffic management applications, ensuring compatibility with existing hardware and network environments. Contributes to project design and development by applying systems engineering principles and ensuring alignment with multi-jurisdictional functional, operational, and interoperability requirements. |
| 20% | E | Develops, manages, and maintains technical documentation, engineering guidelines, and system flow diagrams to support traffic signals and ramp meters. Designs, prepares, and delivers technical training modules, presentations, and instructional materials to support consistent statewide understanding and application of electrical systems-related content such as traffic signals and ramp meters. Collaborates with headquarters and district Caltrans staff, external partners, consultants, and research institutions to enhance traffic signal and ramp meter functionality and meet evolving district operational needs. Supports and participates in statewide committees and technical working groups (such as statewide Traffic Signal Committee meetings) for ITS and electrical infrastructure initiatives. Develops fact sheets, technical analyses, engineering evaluations, presentations, and data analytics on electrical systems and mobility matters for districts, HQ, and executive management. Develops, maintains, and updates technical reference tools and resources for use by district and headquarters staff (i.e. design guidance, best practices, and training materials related to electrical and ITS systems).                                                                                                                                                     |
| 5%  | M | Completes a variety of special projects and assignments as needed by the Division Chief, Deputy Division Chief, Office Chief, and Branch Chief. Performs other work commensurate with the Transportation Engineer (Electrical) classification.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

<sup>1</sup>ESSENTIAL 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  
None. May act in a lead capacity on special projects.

**POSITION DUTY STATEMENT**DOT PM-0924 (REV 01/2025)

---

**KNOWLEDGE, ABILITIES, AND ANALYTICAL REQUIREMENTS**

Requires knowledge of: Computer theory and operation, including state-of-the-art technology (i.e. CADD, personal computers, stand-alone interactive systems and various technical aids); mathematics related to electrical engineering; theory principles, standard practices, techniques and methods used in electrical, electronic and computer engineering; modern electrical apparatus, communications, instrumentation; direct and alternating current circuits; methods, materials, tools and equipment used in electrical, electronic or computer work; various codes; basic 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.

Requires the ability to: Do electrical or electronic design work; make neat and accurate drawings and technical sketches; use state-of-the-art technology, i.e., CADD, personal computers, stand-alone interactive systems and various technical aids; make electrical calculations; inspect electrical installations; specify necessary equipment and materials; accurately interpret drawings, circuit diagrams and specifications; read and understand highway plans, drawings and field data which relate to transportation and traffic management-related electrical and electronic systems and installations; establish and maintain friendly and cooperative relations with those contacted during the course of inspections and other work; analyze situations accurately and take effective action; communicate effectively; originate correspondence and prepare effective reports.

Requires the ability to collaborate with multi-disciplinary, technical staff; communicate effectively (both orally and in writing) with multiple audiences; establish and maintain cooperative relationships with individuals and organizations contacted in the course of work; participate in public contact and represent Caltrans; serve in a consulting capacity to other divisions and districts; and respond appropriately to difficult situations.

Must be able to apply sound judgment in problem solving; work productively in a busy and often changing environment; perform multiple tasks simultaneously; maintain a project schedule; accurately and timely follow-up on issues; and effectively interact with many levels of people in a cooperative manner. Must be decisive, take appropriate actions, and complete tasks or projects with a short notice. Requires proficiency with Microsoft (MS) Office programs (including MS Word, MS Excel, MS PowerPoint, MS Outlook, MS Teams), Adobe Acrobat, Cisco WebEx, and using the Internet.

---

**RESPONSIBILITY FOR DECISIONS AND CONSEQUENCES OF ERROR**

This position is responsible for making independent action and taking initiative to carry out assigned duties. The incumbent's decisions and actions have a direct impact on the Traffic Operations Program and the Department. Inability to carry out this position's responsibilities could result in: adversely affecting public safety and/or result in tort liability for Caltrans; increased expenses resulting from lost Transportation System productivity; litigation that could delay and/or add substantial cost to essential projects or activities; inability to quantify performance in meeting the Department's strategic goals and safety and mobility commitments; loss of credibility and public confidence in Caltrans as a responsible public agency.

---

**PUBLIC AND INTERNAL CONTACTS**

The incumbent must maintain the highest level of professionalism and integrity, exhibit tact and diplomacy, and effectively communicate with all internal/external contacts.

Internal contacts include various Caltrans districts and divisions (including Design, Construction, Maintenance, External Affairs, and Engineering Services). External contacts include the Legislature, Governor's Office, CHP, FHWA, construction industry representatives, local agencies, other states, national experts, academia, the private sector, and the general public.

The incumbent must communicate effectively orally and in writing, by telephone, via email, and by web conferencing. The incumbent is also required to facilitate, participate in, and host meetings.

---

**PHYSICAL, MENTAL, AND EMOTIONAL REQUIREMENTS**

The incumbent must: quickly adapt behavior and work methods in response to new information/priorities and unexpected obstacles; multi-task; effectively interact with many levels of people in a cooperative manner; be decisive; take appropriate actions; and complete tasks or projects with a short notice. Must be able to maintain focus and intensity, yet remain optimistic and persistent, even under adversity. The incumbent shall act in a fair and ethical manner toward others; value cultural diversity and other individual differences in the workforce; and demonstrate a sense of responsibility and commitment to public services. The incumbent must be able to develop new insights into situations and apply innovative solutions to make organizational improvements; grasp the essence of new information and master new technical and business knowledge, particularly in the area of outreach; and facilitate and maintain a work environment that encourages creative thinking and innovation.

Must have the ability to work with a computer and have manual dexterity. Required to sit for long periods of time using a computer, monitors, phone, and other office equipment. The incumbent must be able to occasionally lift up to 25 pounds without assistance. Bending, stooping, and pulling may be required within the normal course of performing some of the responsibilities

---

**ADA Notice**

This document is available in alternative accessible formats. For more information, please contact the Forms Management Unit at (279) 234-2284, TTY 711, in writing at Forms Management Unit, 1120 N Street, MS-89, Sacramento, CA 95814, or by email at [Forms.Management.Unit@dot.ca.gov](mailto:Forms.Management.Unit@dot.ca.gov).

POSITION DUTY STATEMENT

DOT PM-0924 (REV 01/2025)

associated with this position. May be required to speak in front of large groups.

WORK ENVIRONMENT

This position's headquartered location is Sacramento, CA. While at the base of operation, the incumbent works in a climate-controlled office under natural and artificial lighting. Due to periodic issues with heating and air conditioning, building temperatures may fluctuate. Multi-floor buildings are equipped with elevators and stairs.

The incumbent may be required to travel periodically to other office buildings (federal and state offices, district offices, local agencies, etc.) and indoor/outdoor field locations. While at field locations, the incumbent may be exposed to uneven surfaces, noise, and varying climate conditions. The incumbent may be required to travel within the state and may be required to travel out-of-state for business operations. Possession of a valid driver's license is required to operate a State owned, leased, and/or personal vehicle. The environment is fast-paced, demanding, and busy; and requires considerable flexibility in managing time, priorities and assignments. Vacations may be restricted during peak times.

This position may be eligible for telework. The amount of telework is at the discretion of the Department and based on Caltrans' evolving telework policy. Caltrans supports telework, recognizing that in-person attendance may be required based on operational needs. Employees are expected to be able to report to their worksites with minimum notification if an urgent need arises. The selected candidate will be required to commute to the headquartered location as needed to meet operational needs. Business travel may be required and reimbursement considers an employee's designated headquartered location, primary residence, and may be subject to CalHR regulations or applicable bargaining unit contract provisions. All commute expenses to the headquartered location will be the responsibility of the selected candidate.

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 |
|----------------------|------|

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

SUPERVISOR (Print)

|                        |      |
|------------------------|------|
| SUPERVISOR (Signature) | DATE |
|------------------------|------|