

POSITION DUTY STATEMENT

DOT PM-0924 (REV 12/2024)

CLASSIFICATION TITLE Transportation Engineer (Elect)	OFFICE/BRANCH/SECTION D06/Traffic Operations - TMS Support	
WORKING TITLE TMC Support Engineer	POSITION NUMBER 906-350-3609-	REVISION DATE 01/14/2025

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 a Senior Transportation Electrical Engineer (Supervisor), the Transportation Management Systems (TMS) Support Engineer, a Transportation Engineer Electrical (TEE), performs engineering duties, research and analysis throughout the planning, design, construction, maintenance, and operations life cycle phases to ensure reliable, continuous and high performing TMS/ITS electrical installations within the State Highway System. The incumbent develops and maintains the systems operation, performance, and reliability of an end-to-end TMS infrastructure that is comprised of TMS field systems, communications systems, central systems, and other traffic management facilities and electrical systems that utilize state of the art technology. This includes actively supporting Transportation Management Center (TMC) as well as Electrical Systems and Work Zone Operations units. The incumbent provides 24/7 support for TMC operations, including serving as a backup for TMC operators. Cross-training and continuous education along with the mentoring student assistants is an integral role of this position. Department of Justice (DOJ) clearance is required.

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 First, Cultivate Excellence - Engagement, Innovation)
- **Decision Making:** Makes critical and timely decisions. Takes charge. Supports appropriate risk. Makes challenging and appropriate decisions. (Cultivate Excellence - Engagement, Equity)
- **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. (Cultivate Excellence - Integrity, 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. (Cultivate Excellence, Strengthen Stewardship and Drive Efficiency - Engagement, Equity)
- **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. (Cultivate Excellence, Strengthen Stewardship and Drive Efficiency - Engagement, Innovation)
- **Customer Focus:** Considers, prioritizes, and takes action on the needs of both internal and external customers. (Safety First, Cultivate Excellence, Strengthen Stewardship and Drive Efficiency - Engagement, Equity)
- **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. (Cultivate Excellence - Engagement)
- **Analytical Skills:** Approaches problems using a logical, systematic, and sequential approach. Weighs priorities and recognizes underlying issues. (Cultivate Excellence, Strengthen Stewardship and Drive Efficiency - Engagement, Innovation)
- **Technical Expertise:** Depth of knowledge and skill in a technical area. (Safety First, Cultivate Excellence, Enhance and Connect the Multimodal Transportation Network - Engagement, Innovation, Integrity, Pride)

TYPICAL DUTIES:

Percentage
Essential (E)/Marginal (M)¹ Job Description

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25%	E	CENTRAL SYSTEMS SUPPORT: Configure and maintain real-time central management. Support 24/7 operations of TMC and TMS elements, as well as Ramp Metering, Traffic Signals, and Traffic Census as required. Provide support to staff on an as needed basis, including after-hour support. Work with IT department, consultants, vendors, and other Traffic Operations and Maintenance staff to develop/configure and/or troubleshoot central systems. Support central management applications on virtual machines running Windows or Linux operating systems. Consult and develop strategies with operations engineers on the development, testing and implementation of required new and existing central control systems. Design and implement software tools as necessary to simplify daily tasks of TMC operators and TMS Support engineers.
25%	E	TMS ELEMENT SUPPORT: Review and recommend the selection of electrical and electronic equipment to be included in the plans and specifications for systems such as Closed Circuit TV (CCTV), Changeable Message Signs (CMS), Vehicle Detection Stations (VDS) Highway Advisory Radios (HAR), Extinguishable Message Signs (EMS), weather stations (RWIS), Traffic Census Stations, fiber optics, communication networks, servers, and computers. Prepare and maintain TMS system documentation, specifications, and operation manuals. Develop new TMS projects and recommend solutions to Maintenance personnel to ensure life cycle condition and programmed targets for achieving a good condition are met for District TMS assets. Update district and HQ statewide TMS inventory databases. Support and promote TMS asset management strategies.
20%	E	TECHNICAL SUPPORT: Prepare/review/assist in the preparation of design plans, specifications and estimates (PS&E) for TMS. Perform various project lead functions as necessary and guide other Caltrans personnel, contractors, student assistants, and/or consultants as needed. Design and maintain complex wired and wireless communication network systems. Work with various computer operating systems and associated tools to perform daily troubleshooting tasks. Analyze field hardware systems and make real-time decisions in order to maintain 24/7 mission critical operations. Research and initiate TMS improvement pilot projects, and prepare technical reports. Coordinate and provide support to the district's Electrical Design, Electrical Construction, and Electrical Maintenance divisions for all TMS elements.
20%	E	FIELD WORK: Commission ITS elements at the end of construction projects to ensure compliance with plans and specifications, proper installation, and operation and communications with TMC central systems. Visit field sites as necessary when troubleshooting TMS elements and communication systems.
10%	M	MISCELLANEOUS DUTIES: Work with Traffic Management staff to further improve the processes of the TMC, sit on various local and statewide committees and take an active role to further advance the TMC's mission. Attend training sessions as required to keep up with new technologies and advance TMS. Participate in cross training within the division and mentor student interns. Serve as a backup TMC operator as required.

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. Range D may be required to work in lead capacity over engineers and other staff.

KNOWLEDGE, ABILITIES, AND ANALYTICAL REQUIREMENTS

The incumbent must possess knowledge of the basic principles of physics, chemistry, and mathematics as applied to electrical engineering, analog and digital electronics, electrical power, control systems, information technology, communications, telecommunication systems, wireless communication, computer-aided-drafting (CAD), and computer processing systems; methods and equipment of electrical fault diagnosis and troubleshooting; engineering construction and economics. The incumbent must have the ability to prepare complex plans, specifications and estimates, write correspondence and prepare reports, analyze data and situations and take effective action to accomplish the assigned tasks and resolve issues. The incumbent must possess the ability to do simple mapping and drafting and make neat and accurate computations and engineering notes; prepare reports; establish and maintain friendly and cooperative relations with those contacted in the course of the work; communicate effectively. Knowledge of electrical and electronic theory as applied to TMS elements. Knowledge of the various codes, safety orders, standard regulations, and material and construction codes for the installation of electrical equipment. Knowledge of CAD software such as Microstation and Visio to draw plans and network diagrams.

RESPONSIBILITY FOR DECISIONS AND CONSEQUENCES OF ERROR

The incumbent is responsible for the reliability and accuracy of all actions, decisions, and recommendations in his/her capacity. Effective communication, proper use of equipment, correct methods analysis, and timely meeting of all deadlines are the responsibility of the incumbent. Errors may lead to the delay in schedules which may adversely affect the outcome of project delivery and increase in cost of solutions to critical problems as well as adversely affect the payback for expended efforts of team

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members and the loss of opportunities to make California roadways safe and efficient. Lack of sensible decisions could lead to use of defective equipment, contract and project completion delays, lawsuits for damages, late or unauthorized payments, costly complaints, and failure to secure funding for purchased products.

PUBLIC AND INTERNAL CONTACTS

Required to meet with other Caltrans staff, law enforcement personnel, and staff from other agencies, engineering firms, utility companies and the public. These contacts will be verbal or written, as needed, to perform assignments.

PHYSICAL, MENTAL, AND EMOTIONAL REQUIREMENTS

Physical requirements include the ability to travel to work sites away from the office, to move around on uneven surfaces in rugged areas that are near freeways and highways. May be required to stand or sit for long periods of time using a keyboard and video display terminal. Required to physically operate a motorized vehicle and drive for extended periods of time to field locations. Mental Requirements include ability to sustain mental activity necessary for report writing, problem solving, analysis and reasoning when it comes to judgment that relates to public safety, emergencies and traffic safety. Must have the ability to multi-task, adapt to changes in priorities, and complete tasks or projects on time. May be required to work beyond normal work hours during emergencies. Must grasp the essence of new information and master new technical and business knowledge. Must maintain and follow safe work practices, including operation of vehicle amber lights in an appropriate and safe manner. Emotional requirements include ability to develop new insights into situations and apply innovative solutions to make organizational improvement. Ability to resolve emotionally charged issues reasonably and diplomatically. Must be able to develop and maintain cooperative working relationships. Behave in a fair and ethical manner toward others and demonstrate a sense of responsibility and commitment to public service.

WORK ENVIRONMENT

The work environment will consist of a combination of indoor office and outdoor field situations. While at their base of operation, employees will work in a climate-controlled office under artificial lighting. However, due to periodic problems with the heating and air conditioning, the building temperature may fluctuate. Travel to the field will be required as necessary to configure or troubleshoot various TMS/ITS elements. The incumbent will be exposed to walking on varied terrain and in various climates. The incumbent is required to provide 24/7 after-hours support for TMC operations, including serving as a backup for TMC operators. Incumbent must possess a valid Driver's License and maintain the license in good standing at all times. This position may be eligible for telework. The amount of telework is at the discretion of the Department and based on Caltrans's 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.

Reviewed and Approved for advertising:

SUPERVISOR (signature)

(print)

DATE

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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

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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