

POSITION DUTY STATEMENT

DOT PM-0924 (REV 01/2025)

CLASSIFICATION TITLE Transportation Engineer (Elect)	OFFICE/BRANCH/SECTION D03 / TROP / TMS Operations	
WORKING TITLE TMS Operations Engineer	POSITION NUMBER 903-350-3609-044	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 Electrical Engineer of the Office of TMS OPERATIONS, the incumbent is responsible to provide Transportation Management System (TMS) leadership in SHOPP project delivery, system management, systems operation, performance & reliability of an end-to-end TMS infrastructure, planning, design, construction, maintenance & operation of the district's Intelligent Transportation System facilities. This includes application & database servers, networks, telecommunications, video systems, electrical and mechanical systems that are associated with the Transportation Management Center (TMC) & Field Element Network. The TMC operates 24/7 & is the hub of a vast set of network IP sensors, radios, cameras, & electronic signs that allow TMC Operators to disseminate traffic & traveler information to the public.

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

TYPICAL DUTIES:

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

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35%	E	Work with team members to provide support to District 3's Traffic Management Center though software application development and maintenance. Supported platforms and frameworks include: Activu, Active-ITS, RMIS, Platinum, Linux, Flask, React, Nextjs, and District 3 virtual machines. Lead efforts to develop and maintain new applications to streamline TMS activities and TMC operator needs. Participate in Statewide TMS meetings for both operations and field element support. Work with team members to develop ICM deliverables. Support and maintain the TMS database(MySQL). Develop life cycle plans for TMS elements which include, but are not limited to, cameras, electronic message signs, traffic monitoring stations, traffic signals, ramp metering systems and Highway Advisory Radios. Central support duties will be adjusted based on the needs of the TMC and Traffic Operations to provide a safe and reliable SHS that respects the environment.
35%	E	Lead project development, design plans, and write specifications as the subject matter expert of TMS elements. TMS elements may include, but is not limited to Advanced Transportation Managed Systems hardware, applications, software and network, cameras, electronic message sign, traffic monitoring stations and highway advisory radio systems. Identify TMS needs and deficiencies through the lens of operational needs, goals and objectives identified in the SHSMP. Attend Project Development Team meetings, create project lists, and TMS layout maps using any available tools. Coordinate with other electrical units, contractors, and vendors to optimize project design, construction, maintenance and operations. Monitors TMS unit up-time health, life cycle and generates performance reports. Support the generation of TMS TRAC tickets for defective and/or non-operational TMS elements to TMS Maintenance Engineering. Manage and monitor reports on TMS performance and makes recommendations to resolve performance issues. Work in the field with staff to ensure highest level of service for TMS life cycle and operations. Attends and conducts meetings regarding project coordination, delivery, and contract administration. Provide any as needed support to Traffic Operations to help delivery projects needed to improve safety and reliability on the state highway system.
20%	E	Software applications are constantly being updated and improved. This requires programming or coding experience and the use of a Git server to share and properly track revisions. The creation of client-side and server-side scripts and applications using Python, Javascript, and HTML.
10%	M	Stay abreast on new technologies and innovations related to electrical/TMS components, design, and implementation. Work on pilot projects deployed in the field, technical component testing, and research related to technology related to the transportation field. Coordinate with other internal partners and external agencies on implementation of new projects and technology.

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

May act as lead to provide technical direction for technicians, electrical engineers and student assistants as the need arises. May act as the Branch Chief when required.

KNOWLEDGE, ABILITIES, AND ANALYTICAL REQUIREMENTS

Network communication protocols including but not limited to: RS-232, 802.11, DSL, ISDN, Ethernet, PoE, ARP, MAC, STP, VLAN, NAT, IPv4/IPv6, ICMP, RIP, OSPF, TCP, UDP, SSL, FTP, SSH, Telnet, DHCP, DNS, HTTP, HTTPS, SNMP, FTP, NTP. Experience with networking hardware includes but not limited to: routers, switches, modems, patch cables, single mode and multimode fiber optics.

Computer systems including but not limited to: Microsoft Windows Server, Linux, VMware, and embedded controllers. Ability to work in headless environment (bash, sh).

Databases: General understanding of databases and SQL language is required. Experience with Microsoft SQL, Filemaker Pro, MySQL, and/or PostgreSQL is preferred.

Programming Knowledge: Python, JavaScript, HTML, SQL. Other web programming languages a plus.

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 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

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complaints, and failure to secure funding for purchased products.

PUBLIC AND INTERNAL CONTACTS

Frequent contact via email, phone and personal devices from District functional units, local and other government agencies, Caltrans personnel, HQ personnel, contractors, vendors, suppliers, students, and volunteers will be required. Periodic contact with consultants and other public agencies may occur outside work hours.

PHYSICAL, MENTAL, AND EMOTIONAL REQUIREMENTS

The incumbent is required to sit for long periods of time using a keyboard and video display terminal, and maintain long periods of concentration during analysis. Must have a strong desire and willingness to deliver, and possess knowledge and ability to operate modern office equipment including computers and software programs such as MS Office. Must possess the ability to sit, stand, walk, kneel, and lift 25 lbs on an as needed basis. The incumbent must be able to interact cooperatively with many people, deal effectively with pressure; multi-task; adapt to changing priorities; maintain focus and intensity; remain optimistic and persistent even under adversity. Must be receptive to change and new information; adapt behavior and work methods in response to new information; changing conditions or unexpected obstacles; adjust rapidly to new situations warranting attention and resolution. Must be prepared to meet deadlines and complete assignments on time and occasionally under pressure. Be available for occasional travel to various locations throughout California and perform fieldwork, observations, measurements, and studies or be able to work with other staff to achieve similar results. The incumbent must be able to maintain a professional work ethic while communicating and coordinating with others under all conditions. Must behave in a fair and ethical manner toward others, demonstrate a sense of responsibility and commitment to public service, and value cultural diversity and individual differences in the workforce. The incumbent needs to be comfortable fielding large numbers of inquiries for information and to respond immediately with assistance in solving problems. The employee needs to be able to work with others on projects and deliver results by deadlines. The incumbent needs to work effectively under pressure of imminent due dates and persistent tasks.

WORK ENVIRONMENT

Normally, the incumbent will work in a climate-controlled office under artificial lighting in a physical or remote presence. On occasion, the incumbent may be required to visit the District offices and Headquarters. The incumbent may also be required to use public transit (bus or train) or fly to Caltrans sanctioned meetings or training. Occasionally, the incumbent may be required to work outdoors to do field reviews, investigations, and monitor traffic problems, and may be exposed to dirt, noise, uneven surfaces, and/or extreme heat or cold. While in the field, the incumbent must follow safety training and regulations, be constantly alert and responsible for personal safety when working alongside the roadway.

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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