

POSITION DUTY STATEMENT

DOT PM-0924 (REV 01/2025)

CLASSIFICATION TITLE Transportation Engineer (Civil)	OFFICE/BRANCH/SECTION Pavement Program/Pavement Management	
WORKING TITLE Pavement Systems Engineer	POSITION NUMBER 913-601-3135-034	REVISION DATE 07/09/2026

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 a Senior Transportation Engineer, the Transportation Engineer assists in operating, validating, enhancing, and developing Department's Pavement Management System (PaveM), with an emphasis on pavement performance model evaluation, analysis, and optimization. The incumbent maintains and enhances PaveM functionality by supporting system configurations, analyzing pavement performance and PaveM scenario results, and preparing technical reports and recommendations for management and stakeholders. The incumbent assists in performing, coordinating, and monitoring technical studies related to pavement condition, performance, and asset management; validating and developing quality control procedures for Automated Pavement Condition Survey (APCS) data; and developing, maintaining, coordinating, and supporting the Office's Geographic Information System (GIS) applications and mapping needs. The Transportation Engineer assists in developing and delivering training to District staff and other stakeholders and supports the preparation of the annual State of the Pavement Report (SOP) and the pavement portion of the State Highway System Management Plan (SHSMP). The incumbent must have knowledge of pavement evaluation, design, and analysis methodologies, pavement performance modeling related to material response, traffic loading, and climate, and statistical and probabilistic methods applicable to pavement engineering. The incumbent applies this knowledge to evaluate complex pavement management issues and support data-driven pavement management decisions and statewide pavement management initiatives.

CORE COMPETENCIES:

As a Transportation Engineer (Civil), 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. (Prosperity, Employee Excellence - Innovation)
- **Decision Making:** Makes critical and timely decisions. Takes charge. Supports appropriate risk. Makes challenging and appropriate decisions. (Safety, Employee Excellence - Integrity, Stewardship)
- **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. (Employee Excellence - Innovation, Integrity)
- **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. (Prosperity - Integrity, 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. (Employee Excellence - Collaboration, People First)
- **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. (Employee Excellence - Integrity, 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. (Employee Excellence - Collaboration, People First)
- **Analytical Skills:** Approaches problems using a logical, systematic, and sequential approach. Weighs priorities and recognizes underlying issues. (Employee Excellence - Integrity, Stewardship)
- **Computer literacy and application:** Appropriate knowledge of computer applications and other tools necessary to successfully perform tasks. (Prosperity, Employee Excellence - Integrity, Stewardship)

TYPICAL DUTIES:

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

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35%	E	Assists in the daily operation and maintenance of the Department's pavement management system (PaveM). Assists in overseeing the development, configuration, enhancement, and maintenance of PaveM engineering settings, including pavement performance models, decision trees, priority matrices, priority indexes, linear referencing systems, GIS mapping, and other system components. Assists in the development and implementation of new pavement management initiatives within PaveM. Validates system configurations and pavement management data, and documents system validation, research findings, and technical procedures through PaveM memoranda, guidance documents, user manuals, and other standard documentation. Develops and maintains GIS mapping libraries, training materials, and supporting documentation for PaveM users. Prepares technical reports and analyses to support District Maintenance Engineers, the State Pavement Engineer, and other stakeholders. Assists in monitoring research projects and evaluating and implementing research findings to support the Department's pavement management objectives.
20%	E	Performs PaveM scenario analyses, upload data files and evaluates engineering results to support pavement management decisions. Performs technical engineering analyses of pavement condition, performance, and related data, and provides recommendations for pavement preservation, rehabilitation, and maintenance strategies. Performs statistical analyses of pavement performance data to identify trends, validate engineering assumptions, improve data quality, and develop alternative analytical approaches. Investigates and resolves complex engineering issues related to pavement engineering, construction, preservation, and asset management.
15%	E	Serves as lead engineer on PaveM and APCS enhancement assignments. Works independently to prepare and maintain work plans for assigned projects and products. Tracks, manages, and reports progress to assure timely delivery of projects, products, and tasks on a regular basis. Review and update automated scripts using language such as VBA, and python. Creates and produces GIS maps and mapping libraries for district management, district reviewers, and the State Pavement Engineer.
10%	E	Assists in developing, implementing, performing, and reviewing quality control and quality assurance procedures for Automatic Pavement Condition Survey (APCS) data using tools such as GIS and Microsoft Excel. Supports APCS data processing, validation, mining, and analysis to ensure data quality and consistency. Assists in managing APCS data deliveries, transfers, and data sharing with internal and external partners. Supports the preparation and publication of the State of the Pavement Report and other APCS-related technical products.
10%	E	Assists in developing, implementing, performing, and reviewing quality control and quality assurance procedures for Automatic Pavement Condition Survey (APCS) data using tools such as GIS and Microsoft Excel. Supports APCS data processing, validation, mining, and analysis to ensure data quality and consistency. Assists in managing APCS data deliveries, transfers, and data sharing with internal and external partners. Supports the preparation and publication of the State of the Pavement Report and other APCS-related technical products.
10%	M	Assists in coordinating task groups and sub-task groups with representatives from the Pavement Program and other Headquarters functional units. Assists in delivering training and presentations to District and Headquarters staff on PaveM tools, pavement engineering principles, and pavement management practices. Participates in meetings, workshops, and cross-functional initiatives to support statewide pavement management goals.

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
None. May serve as lead worker on assignments involving more than one person.

KNOWLEDGE, ABILITIES, AND ANALYTICAL REQUIREMENTS
The incumbent must have knowledge of the Department's organization, pavement management principles, pavement performance evaluation, preservation and rehabilitation strategies, and Caltrans policies and procedures related to transportation asset management. Knowledge of Microsoft Office Suite is required. Knowledge of programming, database management, and analytical tools such as Python, Visual Basic for Applications (VBA), Structured Query Language (SQL), Groovy scripting, Jasper Reports, Geographic Information Systems (GIS), Power BI, or similar software is desirable. The incumbent must have the ability to work independently, exercise sound engineering judgment, analyze and interpret engineering data, prepare technical reports, develop recommendations, and communicate effectively with Headquarters, Districts, FHWA, local agencies, consultants, academia, and industry representatives. The incumbent must also have the ability to use engineering software and programming

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tools to support pavement management analyses, automate business processes, and improve data quality.

RESPONSIBILITY FOR DECISIONS AND CONSEQUENCES OF ERROR

Based on engineering knowledge and experience, this position provides technical guidance and recommendations related to pavement management, pavement performance, asset management, and the Department's pavement management system (PaveM), including associated standards, policies, procedures, and business processes. The incumbent conducts engineering analyses and evaluates pavement performance data, research findings, and best practices to support the development, implementation, and continuous improvement of statewide pavement management tools, models, decision trees, performance measures, and system configurations. Prior to implementing new system enhancements, business processes, policies, or analytical methodologies, the incumbent gathers and evaluates information from the Division of Maintenance, other Department Headquarters functional units, Districts, the Federal Highway Administration (FHWA), transportation industry partners, academia, consultants, and other state and local agencies. Input from subject matter experts in pavement engineering, pavement preservation, materials, research, construction, maintenance, asset management, information technology, and geographic information systems (GIS) is incorporated, as appropriate, to ensure technically sound and practical recommendations. Failure to adequately evaluate engineering data, stakeholder input, and statewide impacts could result in ineffective pavement management decisions, reduced network performance, inefficient use of public resources, increased maintenance and rehabilitation costs, diminished data quality, and loss of confidence in the Department's pavement management program by Department staff, partner agencies, and the public.

PUBLIC AND INTERNAL CONTACTS

The incumbent must establish and maintain effective working relationships and communicate effectively with personnel within the Division of Maintenance, other Headquarters functional units, Districts, other state and federal agencies, local agencies, consultants, academia, and industry representatives. The incumbent collaborates with internal and external stakeholders to support the Department's pavement management program by providing technical expertise, data analyses, system support, and recommendations related to PaveM, APCS data, pavement performance, and statewide pavement management initiatives.

PHYSICAL, MENTAL, AND EMOTIONAL REQUIREMENTS

The incumbent may be required to sit for long periods of time, at their desk, using a keyboard and video display terminal. Manual dexterity, and sustained periods of mental activity are needed for report reviewing and writing; problem solving, analysis and reasoning. The incumbent may also be required to travel via airplanes, use rental cars, motor vehicles, vans and buses, and stay overnight in motel/hotel accommodations. The incumbent may occasionally be required to move materials weighing up to fifty (50) lbs and move large and/or cumbersome plans and diagrams from one office location to another. The incumbent will need to establish and maintain friendly and cooperative working relationships with those contacted in the course of the work. The incumbent will need to communicate effectively by recognizing emotionally charged issues or problems, acknowledging the various responses, and responding appropriately and professionally to difficult situations.

WORK ENVIRONMENT

While at the base of operation, the incumbent will work in a climate-controlled office under artificial lighting. The incumbent will be required to travel throughout California to attend meetings and provide training. The incumbent will also be required to occasionally work outdoors, exposed to dirt, dust, noise, uneven ground surfaces, allergens in the air and hot or cold temperature extremes.

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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