

POSITION DUTY STATEMENT

DOT PM-0924 (REV 08/2024)

CLASSIFICATION TITLE Materials and Research Engineering Associate (Specialist)	OFFICE/BRANCH/SECTION District 03/North Region Construction	
WORKING TITLE Material Testing Specialist	POSITION NUMBER 927-502-3381-XXX	REVISION DATE

As a valued member of the Caltrans leadership team, you make it possible for the Department to provide a safe and reliable transportation network that serves all people and respects the environment.

GENERAL STATEMENT:

Under the supervision of the District Materials Engineer, a Senior Transportation Engineer, and the general direction from the assistant lab manager and lab lead worker, a Materials and Research Engineering Associate (MREA), the incumbent performs a variety of complicated and specialized testing laboratory procedures of highway construction materials and other related material testing work. The incumbent uses engineering calculations and computer-oriented processes to compile, analyze, and report material testing results. Certifications in Caltrans Test Methods (CTM), American Association of State Highway Officials (AASHTO), American Society for Testing and Materials (ASTM), and American Concrete Institute (CTI) for the various test procedures mandated by the Standard Specifications and Special Provisions is required. Possession of a valid driver's license is required to operate a State-owned or leased vehicle.

CORE COMPETENCIES:

As a Materials and Research Engineering Associate (Specialist), 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.

- **Learning on the Fly:** Learns quickly, is open to change, experiments, and is flexible. (Cultivate Excellence, Strengthen Stewardship and Drive Efficiency, Advance Equity and Livability in all Communities - Engagement, Innovation)
- **Dealing with Ambiguity (Risk):** Can comfortably handle risk and uncertainty, as well as make decisions to act without having the total picture. (Cultivate Excellence, Strengthen Stewardship and Drive Efficiency - Innovation, Integrity)
- **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 First, Strengthen Stewardship and Drive Efficiency, Lead Climate Action, Advance Equity and Livability in all Communities - 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, Enhance and Connect the Multimodal Transportation Network - Engagement, Innovation)
- **Fostering Diversity:** Capable of working with a diverse work group, including but not limited to differences in race, nationality, culture, age, gender, and differently able. Makes everyone feel valuable regardless of diversity in personality, culture, or background. Fosters a diverse culture to create best solutions. (Cultivate Excellence, Advance Equity and Livability in all Communities - Equity, Integrity)
- **Customer Focus:** Considers, prioritizes, and takes action on the needs of both internal and external customers. (Safety First, Enhance and Connect the Multimodal Transportation Network, Lead Climate Action - Engagement, Innovation)
- **Interpersonal Effectiveness :** Effectively and appropriately interacts and communicates with others to build positive, constructive, professional relationships. Tailors communication style based on the audience. Provides and is receptive to feedback. (Cultivate Excellence, Advance Equity and Livability in all Communities - Equity, Integrity, Pride)
- **Forward Thinking:** Anticipates the implications and consequences of situations and takes appropriate actions to be prepared for possible contingencies. Anticipates and prepares for future developments. (Cultivate Excellence, Enhance and Connect the Multimodal Transportation Network, Advance Equity and Livability in all Communities - Equity, Innovation)
- **Technical Expertise:** Depth of knowledge and skill in a technical area. (Cultivate Excellence, Strengthen Stewardship and Drive Efficiency - Engagement, Innovation)

TYPICAL DUTIES:

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

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45%	E	Performs specialized laboratory physical tests of highway construction materials in accordance with Caltrans Test Methods (CTM), the American Association of State Highway Officials (AASHTO), the American Society for Testing and Materials (ASTM), and the American Concrete Institute (ACI) test procedures, as required by the Standard Specifications and Special Provisions. These tests include, but are not limited to: coarse and fine grading of soils and aggregates, sand equivalents, asphalt oil content using asphalt ignition oven, cleanness, durability, specific gravities, asphalt stabilities, and the capping and compression testing of Portland cement concrete cylinders. Follows the Laboratory Procedures Manual, Quality Control Manual, Caltrans Laboratory Accreditation Manual, and Quality Management System Manual, when performing the required tests. Administers the Material Plant Quality Program (MPQP) including conducting plant/truck/equipment inspections to ensure safety requirements are met, instruments are properly calibrated, plant operations are functional, etc.
30%	E	Collects, analyzes, calculates and inputs test data to produce accurate and timely material testing reports by efficiently using computer programs such as, but not limited to, Microsoft Word, Excel, and Access. Efficiently uses the Data Interchange for Materials Engineering (DIME) web based software to input and publish testing results. Assist Construction staff in understanding of testing procedures, test results, and the impacts upon work performed. Analyze whether differences in Quality Control and Quality Assurance test results are within acceptable ranges or require 3rd party disputes. Prepares materials reports for pavement structure, culvert corrosion, and deflection study recommendations through leading and conducting investigations and analysis including but not limited to; exploring and determining field conditions by operating and maintaining powered and non-powered equipment to perform sampling and testing, determining soil, loading, environmental conditions, etc., to be used as basis for design and recommendations, performing preliminary research and data acquisition, coordinating with other units/ departments/agencies in facilitating pavement/soil during testing including working in highway traffic lanes and rough off highway terrain. Maintain records of all materials reviews, and correspondence.
15%	E	Ensures that laboratory facilities are kept neat, orderly, and clean and free of clutter. Ensures tools, equipment, machines, and devices are kept clean and in good working condition. Immediately notifies the District Laboratory Manager of any equipment, tool, machine, or device that is broken malfunctioning, or in need of repair.
5%	E	Provides expert technical advice to other district personnel with regards to sampling, testing, and interpretation of test results.
5%	M	Other duties as assigned related to laboratory work.

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

Incumbent does not exercise supervision over others. May be asked to act as the lead worker for the District 1 Materials Laboratory in the absence of the assistant lab manager.

KNOWLEDGE, ABILITIES, AND ANALYTICAL REQUIREMENTS

Knowledge and ability to follow, interpret, understand, perform, and analyze all CTM, AASHTO, ASTM, and ACI test methods required. Incumbent must maintain the required certifications current at all times. The mechanical aptitude required to maintain, calibrate, and operate laboratory testing equipment such as weighing scales, sieve shakers, hot asphalt extractors, asphalt ignition oven, sand equivalent shaker, compression machines, and various other testing equipment.

Ability to write, read, review, and accurately interpret and understand testing procedures, manuals, project plans and specifications; ability to work with computers using applications such as Word, Excel and Adobe Acrobat; ability to perform mathematical calculations at a level required for successful job performance; ability to communicate effectively both orally and in writing to prepare clear, accurate, and timely reports. Ability to multitask, in an organized manner, in order to perform various tests for various construction jobs while maintaining the integrity and accuracy of the testing and reported results is essential.

RESPONSIBILITY FOR DECISIONS AND CONSEQUENCES OF ERROR

Incumbent is responsible for the technical control, decisions made, actions taken and the consequences inherently associated to the assigned tasks. Erroneous passing test results may allow non-compliant materials and substandard work to remain in place, which could lead to poor project performance and/or premature failure. Erroneous failing test results may lead to protracted delays in construction, with the possibility of costly disputes with contractors and material suppliers.

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PUBLIC AND INTERNAL CONTACTS

The incumbent must be able to establish and maintain a professional and cooperative relationship with those contacted in the course of the work, such as with Region and District functions, contractors and their employees, local agencies and officials, regulatory agencies, utility companies, engineering consultants, developers and public stakeholders in order to transmit or obtain relevant engineering information. These contacts could be verbal or written, as needed, to perform assignments with the goal of protecting the State's interests and providing quality products on and for the State's infrastructure. Requires contact and communication with suppliers of materials, resident engineers, design personnel, external lab personnel and could require contact with other State Agencies. Some contact with owners of materials sites and owners of property adjacent to highway is necessary. Occasionally handles inquiries from contractors and general public for technical information on highway projects.

PHYSICAL, MENTAL, AND EMOTIONAL REQUIREMENTS

Employees will be required to sit for long periods of time using a keyboard and video display terminal. Frequent telephone interaction is common and necessary. Employees will also work under field conditions, which will entail walking on uneven terrain under variable weather conditions. At times, the incumbent may have to be out on the project and at that time, the incumbent may have to stand for long periods of time, walk on slopes or uneven terrain, move and transport bags of material samples (weighing up to 50 pounds). Assistance with lifting will be available, if needed. Position requires using cutting tools to clear brush, which can be dense and could include poison oak and locations are often set in tick infested terrain, while transporting stakes, supplies, and equipment as necessary. The incumbent can expect to work under very noisy conditions and is required to be tolerant of working within very close range of high-speed traffic and heavy equipment.

This position is stressful, with frequent time sensitive deadlines. The incumbent must be able to work efficiently and effectively while facing impending deadlines and unforeseen obstacles. Incumbent must be able to recognize emotionally charged issues, problems or difficult situations and act professionally at all times, manage conflict, and successfully carry out the assigned tasks in a timely manner. Incumbent must understand the importance of providing excellent customer service at all times and be willing to develop and maintain excellent working partnerships.

WORK ENVIRONMENT

Incumbent may be required to work in a variety of environments. At the base of operations, tasks will usually be performed in a climate-controlled environment with natural and artificial lighting. Incumbent will be required to work with and around materials in excess of 300 degrees Fahrenheit and around various orders of asphalt, aggregate, concrete, and associated compounds and byproducts including, but not limited to, dust, noise, sulfur and petroleum fumes. Incumbent must wear the appropriate Personal Protective Equipment (PPE) in accordance with the Department Safety Manual, Laboratory Safety Manual, and CalOSHA requirements. PPE's include, but are not limited to, hard hat, safety vest, respirator, safety glasses, ear protection, gloves, and proper footwear. Possession of a valid driver's license is required to operate a State-owned or leased vehicle. There will be periodic field trips to project sites, travel to meet with agencies, the public, and for training classes. Incumbent must be able to travel to project locations away from their home requiring overnight travel; must be able to work overtime when needed; must be able to work on foot near heavy traffic; must be able to work in extreme weather conditions including wet, cold, hot, dusty and dirty environments.

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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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