

CLASSIFICATION TITLE Sr Bridge Eng	OFFICE/BRANCH/SECTION DES/Bridge Design	
WORKING TITLE Technical Specialist	POSITION NUMBER 559-240-3185-104	REVISION DATE 03/24/2025

As a valued member of the Caltrans team, you make it possible to improve lives and communities through transportation.

GENERAL STATEMENT:

Under direction of a Supervising Bridge Engineer, a Senior Bridge Engineer, the Technical Specialist will perform difficult and complex work on specialized transportation-related structures, engineering projects, or research studies. The incumbent may work in a bridge design branch and receive work assignments, including production work and quality reviews from the Branch Chief. This is a technical position with responsibility for analysis, training and mentoring, project delivery relative to large, complex or high risk bridge design work, and coordination and delivery of large scale projects.

CORE COMPETENCIES:

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

TYPICAL DUTIES:

Percentage Essential (E)/Marginal (M) ¹	Job Description
45% E	Serves as structure project engineer on complex transportation-related structures and large projects. This role requires coordinating tasks with engineers in the design branch and with other Division of Engineering Services (DES) functional units as well as with external project stakeholders such as District project management and design staff. Provides support to the District for structural, environmental, aesthetic, public and other District concerns during project development phase. Monitors project resources and relays information to the Branch Chief.

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20%	E	Participates in the evolution, development, and implementation of Caltrans bridge design technical guidance through committee or team efforts related to research, technical report reviews and literature surveys. Briefs staff on topics being discussed at technical team meetings, answers technical questions regarding the design standards and software, and provides training on design criteria and guidance. Performs quality reviews including IQA reviews.
15%	E	Provides training and guidance to branch staff on PE roles and responsibilities and the completion of project delivery related tasks. Provides guidance and support to branch staff on technical design issues.
10%	E	Monitors and reviews the progress and quality of work. Coordinates a constructibility review for the structural portion of the project. Resolves project delivery issues, escalates problem areas to Bridge Design Office Chiefs and Deputy Division Chief with recommended course of action.
5%	M	Provides support for task management activities in the branch and may act as a secondary branch chief for the design branch.
5%	M	Utilizes state-of-the-art technologies including Building Information Modeling (BIM) tools, shared review software and other related programs.

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 other employees, but acts as lead person responsible for providing guidance to a group of employees regarding special projects.

KNOWLEDGE, ABILITIES, AND ANALYTICAL REQUIREMENTS

The incumbent must possess a valid certification of registration as a Civil Engineer issued by the California State Board of Registration for Professional Engineers. Must have education equivalent to graduation from college with major work in civil engineering with emphasis on structural work.

Knowledge of:

- Purposes, organization, policies, and procedures of the Department of Transportation and the Division of Engineering Services.
- Methods of design and construction of various types of bridges and transportation-related structures.
- Characteristics of materials and equipment used in structure design and construction of bridges and transportation-related structures.
- Methods of stress analysis for both statically determinate and indeterminate structures, of the determination and influence of deflection on the stresses in structures.
- Design practices for bridge or structure engineering as applied to transportation-related structures.
- Factors affecting structure type selection, constructibility maintenance inspection and load rating of structures.
- Structure seismic design criteria, modern seismic design philosophy, and factors affecting seismic behavior of bridges.
- Geotechnical conditions/parameters that affect the design of bridges and walls, and the potential impact of liquefaction and scour on bridge design.
- Principles of project management including scope, schedule, and budget.
- Risk and quality management principles.
- Consultant contracting process, including consultant selection and contract management.
- External financing of transportation facilities.
- Budgetary and resource matters; economics of bridge design and financing and handling of construction work by contract.
- The challenges and constraints facing our District partners and the willingness and ability to find solutions that work within those constraints.

Ability to:

- Perform engineering calculations and develop engineering sketches.
- Analyze technical situations accurately and recommend or adopt an effective course of action.
- Address and audience effectively; work effectively with Caltrans' Districts, consultants, local government agencies and other transportation financing agencies.
- Plan, direct and coordinate the work of a group of engineering and technical staff.
- Review and communicate effectively both orally and in writing, including technical papers, memos and email, with all levels of management and employees in Headquarters and Districts, consultants and with persons outside the Department, locally and nationally in other transportation financing agencies.
- Estimating and inspection of all types of bridges, major structures or transportation-related buildings, including foundations.

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- Use state-of-the-art technologies including CADD (Microstation, AutoCAD/Civil 3D), advanced BIM tools (Bentley Modeling, Tekla), shared review softwares (e.g. Bluebeam) and other related programs.
- Analyze situations accurately and adopt an effective course of action.
- Work successfully with others to gain their respect and confidence.
- Be flexible and adaptive to changes.

Analytical Requirements:

- Ability to assimilate technical and procedural input from various sources, to evaluate that input, develop alternative courses of action and to make objective recommendations on all critical issues affecting the planning, project delivery, maintenance and applied studies related to transportation systems.
- Must reason logically and creatively using a variety of analytical and problem-solving techniques.

RESPONSIBILITY FOR DECISIONS AND CONSEQUENCES OF ERROR

The incumbent has the professional responsibility to assure the safety of the traveling public at a cost that is an effective use of public funds. Errors in judgment and decisions could affect program delivery, lead to costly contract change orders, impact public safety, or result in liability for the Department. Structural failure can be catastrophic due to loss of life, disruption in goods movement, and/or delays to the traveling public.

PUBLIC AND INTERNAL CONTACTS

Employee maintains communication with all personnel assigned to his/her project, including bridge designers and staff from other DES functional units, as well as District project managers and designers, and local stakeholders or outside agencies on project issues such as scope, cost and schedule. Examples of outside contacts include regional transportation agencies and local communities with a vested stake in a particular project. Works with maintenance personnel on routine and emergency issues as a technical advisor. Maintains communication with appropriate vendors and other industry representatives.

PHYSICAL, MENTAL, AND EMOTIONAL REQUIREMENTS

Employee may be required to sit for long periods of time using keyboard and mouse. May also be required to lift/move/carry large or cumbersome plans (maximum of 50 pounds). They may be required to lift/move/carry various types of portable equipment, which may weigh up to 50 pounds. Must be able to adapt to changes in priorities and complete tasks or projects with short notice. Must be able to work with others in a cooperative manner and treat others with respect.

Must be able to use fine manipulation and/or simple grasping during the course of their workday. Some walking may be required.

Must be able to effectively communicate in English, both orally and in writing, and have the demonstrated ability to make presentations, lead workshops, and serve on quality teams. The incumbent must be able to sustain the mental activity needed to conduct necessary research, analysis, and synthesis of issues and make well-reasoned recommendations to management.

Must be able to organize and prioritize large volumes of varied documents. The workload is subject to frequent, substantial and unexpected changes that could affect the scheduling or completion of assignments.

Will be required to travel to meetings statewide and nationally. Will be required to meet at construction sites and work in the field. Must be able to handle multi-tasks, adapt to changes in priorities, and complete tasks or projects with short notice and work with others in a cooperative manner. The incumbent must have the ability to develop and maintain cooperative collaborative working relationships and recognize difficult, emotionally charged and/or sensitive situations and handle them effectively and appropriately. Must deal effectively with pressure, maintain focus and intensity yet remain optimistic and persistent, even under adversity.

The incumbent behaves in a fair and ethical manner toward others and demonstrates a sense of responsibility and commitment to public service. The incumbent values cultural diversity and other individual differences in the workforce.

WORK ENVIRONMENT

While at their base of operation, incumbent will work in a climate-controlled office under artificial lighting or work-from-home in self-controlled telework environment. As a statewide organization, DES adjusts to periods of fluctuating workload to successfully deliver projects. Incumbent will be required to travel and perform fieldwork and will be exposed to dirt, uneven surfaces, extreme temperatures, noise, vibration, and odor associated with fieldwork. May work around bulky/heavy materials and equipment used in the vicinity of inspection areas. May also be exposed to the motoring public. DES employees may be given temporary assignments on DES projects throughout the State as workload demands.

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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