

**POSITION DUTY STATEMENT**

PM-0924 (REV 7/2014)

CLASSIFICATION TITLE Senior Bridge Engineer (Specialist)	OFFICE/BRANCH/SECTION DES/SP&I/OEE
WORKING TITLE Technical Specialist: Analysis and Computer Applications	POSITION NUMBER 559-220-3185-xxx
	EFFECTIVE DATE November 18, 2014

As a valued member of the Caltrans team, you make it possible for the Department to provide a safe, sustainable, integrated, and efficient transportation system to enhance California's economy and livability. Caltrans is a performance-driven, transparent, and accountable organization that values its people, resources and partners, and meets new challenges through leadership, innovation and teamwork.

**GENERAL STATEMENT:**

Under the supervision of a Supervising Bridge Engineer, the incumbent develops maintains and support the departmental design standards and guidance; provides internal support to Project Delivery, Districts, Headquarters and others; supports The State Bridge Engineer in national engagement activities with entities such as AASHTO and FHWA and industry liaison activities with the A&E industry; provides technical support for special studies and research projects. The incumbent is also responsible for developing, implementing, maintaining and monitoring the standards, guidance, procedures and quality management for all internally developed and procured engineering software utilized by the Division of Engineering Services (DES). the incumbent stays abreast of the latest innovations and practices in the technical area of bridge analysis.

**TYPICAL DUTIES:**

Percentage	Essential (E)/Marginal (M) <sup>1</sup>	Job Description
20%	E	Develop, revise, update and interpret bridge and structural standards and guidance in the area of bridge and structural analysis. This includes but is not limited to: policy memos, standard plans and drawings and details, technical memos, design aids and design examples, technical reports, and training materials. Lead and perform software quality assurance for computer analysis programs.
20%	E	Develop, revise, update and interpret bridge and structural standards and guidance in the area of computational mechanics. Develop, revise, and update DES software engineering practices in accordance with Departmental IT policy and procedures. Provide technical support and consultation to software developers, procurers, and users of bridge engineering software.
20%	E	Develop and maintain the DES engineering computer software development and procurement manual, including the DES software Quality Management Plan and software development, documentation and deployment procedures.
20%	E	Develops and maintains engineering computer software applications for use by engineers within DES. Perform activities pertaining to the maintenance and development of bridge engineering and earth retaining systems software. This includes but is not limited to the design and coding of process algorithms, programming objects and their interactions, data structures, input/output operations and user interfaces.
10%	E	Provide technical support for design engineers on complex analytical and computational issues such as: finite element and non linear time history analysis, primary and secondary force distribution in bridges and load combinations. Provide technical assistance: for special situations not covered by standards, during Type Selection or other meetings; via training, workshops, or one-on-one consultation.
5%	M	Provide technical support for special studies and research projects in area of technical expertise: write or evaluate problem statements, review interim reports, comment on test plans, lead the implementation of results within the Department.

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5% M Assist the State Bridge Engineer in national engagement by working with other Agencies, States, AASHTO, and industry. Provide direction on annual AASHTO ballot items, in support of maintaining AASHTO Standards used by the Department.

<sup>1</sup>ESSENTIAL 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.

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### SUPERVISION OR GUIDANCE EXERCISED OVER OTHERS

This position does not supervise other employees. Incumbent may provide lead direction to a group of employees regarding special projects.

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### KNOWLEDGE, ABILITIES, AND ANALYTICAL REQUIREMENTS

Must hold a valid certificate of registration in California as a Civil Engineer. Must have education or experience equivalent to graduation from college with major work in Civil Engineering. Must have knowledge of various methods of structural analysis required for the review of designs submitted by others. Must have knowledge of the project development process and how it interfaces with other units within DES and the Districts. Must have strong command of English and excellent verbal and written communication skills. Must be able to readily obtain complete and amicable cooperation from personnel in all functional units involved in Capital Corporate and Project Direct activities. Must be completely knowledgeable of Structure Design policies, procedures and philosophies. Must know and implement Department and Division policies and procedures.

Must have a high level of competency in bridge design, maintenance and construction, and an understanding of how structures behave analytically. Must have knowledge of static, dynamic, linear and non-linear analysis techniques

Must have high level of competency and experience in developing, maintaining and documenting bridge engineering software applications.

Incumbent analyzes and acts on complex and unique structure design and public works management and administration issues. Extensive analytical skills are required:

1. To assess personnel and other resource needs.
2. To resolve complex conflicts.
3. To evaluate the design practices of various complex structure projects.
4. To assess current processes and make recommendations for improvement.

Must maintain current knowledge of, computer systems, software engineering practices and Departmental IT policy and procedures as they relate to bridge engineering software.

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### RESPONSIBILITY FOR DECISIONS AND CONSEQUENCES OF ERROR

Incumbent is responsible for the engineering software and analysis policies, practices, and the guidance to ensure that the products comply with State and Federal laws and regulations and reflect the policy of the Department. Failure to carry out the responsibilities of the functions may unnecessarily increase engineering and construction costs, permit lower quality of work, mismanagement of public monies, and compromise public safety.

In addition, the incumbent acts when required for the office chief per the "Delegation of Authority". Poor judgment may unnecessarily cause consequences as cited above.

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### PUBLIC AND INTERNAL CONTACTS

Maintains close communications with other DES personnel, Departmental employees, and the private sector. Attends meeting and discussions with other Structure offices to resolve questions and issues concerning seismic and software issues. Resolves policy issues in the subject matter areas of software and analysis. Responds to direct inquiries related to bridge engineering software and analysis. Responds to inquires for other States, various agencies, private practitioners, industry representatives, vendors, and foreign partners.

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### PHYSICAL, MENTAL, AND EMOTIONAL REQUIREMENTS

Incumbent may be required to sit for long periods of time using keyboard and video display terminal. Incumbent must

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have the ability to multi-task and adapt to changes in priorities. Incumbent must behave in a fair and ethical manner toward others and demonstrate a sense of responsibility and commitment to public service.

**WORK ENVIRONMENT**

Incumbent will work in a climate-controlled office under artificial light. Employee may travel domestically and abroad as necessary to meet with Districts, Local Agencies, consultants, and other entities and partners to effectively carry out the duties of the position.

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.)

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