



ASSOCIATE CHEMICAL TESTING ENGINEER

Departmental Promotional

Exam Code: 7TR31

Department: Caltrans

Bulletin Release Date: July 12, 2017

Final Filing Date: July 28, 2017

Salary: \$7,514.00 to \$9,409.00

INTRODUCTION

Caltrans is pleased to announce the posting of the **Associate Chemical Testing Engineer** examination. Employment from this examination may be offered in Sacramento County.

Candidates may only establish eligibility in the location listed above.

EQUAL EMPLOYMENT OPPORTUNITY

Caltrans is an equal opportunity employer to all, regardless of age, ancestry, color, disability (mental and physical), exercising the right to family care and medical leave, gender, gender expression, gender identity, genetic information, marital status, medical condition, military or veteran status, national origin, political affiliation, race, religious creed, sex (includes pregnancy, childbirth, breastfeeding and related medical conditions), and sexual orientation.

DRUG FREE STATEMENT

It is an objective of the State of California to achieve a drug-free work place. All applicants will be expected to behave in accordance with this objective, as the use of illegal drugs is inconsistent with the law of the State, the rules governing civil service, and the special trust placed in public servants.

WHO SHOULD APPLY?

This is a Departmental Promotional examination for Caltrans. Applicants must be:

- 1) A permanent civil service appointment with Caltrans as of the final filing date in order to participate in the examination; or
- 2) Have been employed with Caltrans within the last three years, without a break in State civil service; or
- 3) A current or former employee of the Legislature for two or more years as defined in Government Code §18990; or
- 4) A current or former non-elected exempt employee of the Executive Branch for two or more consecutive years as defined in Government Code §18992; or
- 5) A person retired from the United States military, honorably discharged from active military duty with a service-connected disability, or honorably discharged from active duty as defined in Government Code §18991. Persons applying who qualify as a Veteran under Government Code Section 18991 must submit a copy of their DD214 with their Examination Application (STD. 678).

Candidates who meet the minimum qualifications as stated on this announcement may apply for this examination.

FILING INSTRUCTIONS

Candidates are required to submit: 1) **Standard State Application (STD.678).**

Applications (STD 678) must be received or postmarked no later than the final filing date. Dates printed on Mobile Bar Codes, such as the Quick Response (QR) Codes available at the USPS, are not considered Postmark dates for the purpose of determining timely filing of an application. Faxed or E-mailed applications will NOT be accepted. THE EXAMINATION TITLE MUST BE INDICATED ON THE APPLICATION.

MAILING ADDRESS:

**Caltrans
Examination Services (MS 86)
P.O. Box 168036
Sacramento, CA 95816-8036**

SUBMIT IN PERSON:

**Caltrans
Examination Services (MS 86)
1727 30th Street, 1st Floor
Sacramento, CA 95816**

***Candidates are responsible for obtaining proof of mailing or submission of their application to Examination Services.**

POSITION STATEMENT

Under direction, to perform the more difficult or specialized chemical testing engineering work in the analysis of engineering construction materials and to assist in the supervision of a chemical testing laboratory; and to do other related work.

Performs the more difficult or specialized work in chemical analyses of raw materials and finished products, such as: ferrous and nonferrous metals, protective coatings, traffic line paints, and other paints, fuel and weed oils, asphaltic materials, cement and concrete aggregates, soils, foundation materials, water, water for concrete, and other engineering and miscellaneous materials; assists in developing specifications and, as required, prepares specifications for various construction materials; assists in conducting research and investigational work and developing methods and tests to determine the chemical composition and related qualities of road building and construction materials; makes field and shop inspections for compliance with specifications and suitability and durability of the product; witnesses manufacturer's tests on products as a basis for acceptance or rejection and confers with manufacturers as to methods of correcting deficiencies in finished products; assists in investigating complaints from the field and makes recommendations for solution of the problems; as required, makes recommendations for appropriate material substitutions for those specified; as required, makes the necessary physical analysis of products in connection with any particular project; assists in supervision of the staff of the chemical testing section; prepares reports on results of analyses and investigations.

ELIGIBLE LIST INFORMATION

A Departmental Promotional spot eligible list will be established for Caltrans in Sacramento County. The list will be abolished 24 months after it is established unless the needs of the service and conditions of the list warrant a change in this period.

REQUIREMENTS FOR ADMITTANCE TO THE EXAMINATION

All applicants must meet the education and/or experience requirements for this examination by the final filing date. Your signature on the application indicates that you read, understand, and possess the minimum qualifications required, and that the information provided is true and complete to the best of your knowledge.

All applications must include: "to" and "from" dates (month/day/year), time base, civil service or private sector titles, the duties performed, and an original signature. Applications received without this information will be rejected.

NOTE: Qualifying experience may be combined on a proportionate basis if the requirements stated below include more than one pattern and are distinguished as "Either I," "or II," "or III," etc. For example, candidates who possess qualifying experience amounting to 50% of the required time of Pattern I, and additional

experience amounting to 50% of the required time of Pattern II, may be admitted to an examination as meeting 100% of the overall experience requirements.

Click on the link below to review the California State Personnel Board class specification which contain the requirements for admittance to the examination:

<https://calhr.ca.gov/state-hr-professionals/Pages/3403.aspx>

MINIMUM QUALIFICATIONS

Either I

Two years of experience performing the duties of an Assistant Chemical Testing Engineer in the California state service.

Or II

Experience: Four years of responsible chemical testing engineering experience, two years of which must have been in the chemical testing of construction materials. (Graduate work in chemistry or chemical engineering may be substituted for one year of the required general experience on a year-for-year basis.) **and**

Education: Equivalent to graduation from college with major work in chemistry or chemical engineering. (Additional qualifying experience may be substituted for the required education on a year-for-year basis.)

EXAMINATION INFORMATION

This examination will utilize an evaluation of each candidate's experience and education/training compared to a standard developed from the class specification. For this reason, it is especially important that each candidate take special care in accurately and completely filling out his or her application. List all experience relevant to the "Minimum Qualifications" shown on this announcement. Supplementary information will be accepted, but read the "Minimum Qualifications" carefully to see what kind of information will be useful to the staff doing the evaluation.

KNOWLEDGE AND ABILITIES

Knowledge of:

1. Principles of general chemistry
2. General chemical laboratory testing procedures
3. General chemical laboratory testing equipment (e.g., Ion chromatograph, Gas chromatograph, Analytical balance, Infrared spectrophotometer, X-ray diffraction spectrometer, Auto-titration analyzer, Metal analyzer, Stereomicroscope system, Color spectrophotometer)
4. Organic chemistry as it applies to the testing of roadway, highway, building construction, consumer products, and a wide variety of other materials
5. Inorganic chemistry as it applies to the testing of highway, building construction, consumer products, and a wide variety of other materials
6. Road and highway construction properties and testing procedures
7. Limitations of testing procedures
8. Chemical characteristics and properties of various road and highway construction materials
9. Methods used to test road and highway construction test samples
10. Equipment used in testing road and highway construction materials samples
11. Materials used in road and highway construction
12. The fundamentals of organic chemistry with laboratory skills in qualitative and quantitative analysis
13. The fundamentals of inorganic chemistry with laboratory skills in qualitative and quantitative analysis
14. Thermoplastics used in roadway and highway construction
15. Paints used in roadway and highway construction
16. Methods and techniques of laboratory analysis
17. Hazards of laboratory and field activities
18. Laboratory terminology
19. Physics and mathematics
20. Laboratory tests and control techniques
21. The fundamentals of analytical instrumentation
22. Appropriate health, safety, and environmental regulations to provide for safe laboratory practices
23. Appropriate health, safety, and environmental regulations to provide for safe field practices
24. Record keeping procedures

Ability to:

1. Perform chemical testing work
2. Conduct independent chemical research and investigational work to make recommendations related to the development of specifications

3. Use laboratory equipment (e.g., Ion chromatograph, Gas chromatograph, Analytical balance, Infrared spectrophotometer, X-ray diffraction spectrometer, Auto-titration analyzer, Metal analyzer, Stereomicroscope system, Color spectrophotometer)
4. Use hand tools (e.g., beakers, tongs, droppers, graduated cylinders, funnels, tweezers)
5. Set up, care for, and use laboratory equipment
6. Base final decisions on laboratory test results, specifications, and fit for purpose
7. Prepare reports
8. Analyze situations accurately and take effective action
9. Utilize computer applications (Microsoft Word, Excel, PowerPoint, Outlook, etc.)
10. Maintain clear and accurate records
11. Use good verbal and written communication
12. Read and understand information and ideas presented in writing
13. Follow oral and written instructions
14. Enter test sample information into a computer database
15. Assess measurements for accuracy
16. Maintain effective working relationships with others
17. Exercise initiative and independent judgement
18. Plan, assign and review the work of others.
19. Conduct methodological research
20. Apply general rules to specific problems to produce solutions
21. Recognize problems in a testing environment
22. Combine pieces of information to form general rules or conclusions, including finding a relationship among seemingly unrelated events
23. Prepare solutions and chemical reagents
24. Travel to worksites

Personnel Characteristics:

1. Work in adverse weather conditions and/or at extreme heights
2. Lift and carry 40 pounds
3. Utilize precision techniques and fine motor skills for precise measurements

VETERANS' PREFERENCE

Veterans' Preference will not be granted in the examination as it does not meet the requirements to qualify for Veterans' Preference.

CAREER CREDITS

Career Credits will not be granted in this examination.

CONTACT INFORMATION

For more information regarding this examination, please contact the examination analyst at (916) 227-7791.

GENERAL INFORMATION

For an examination without a written feature, it is the candidate's responsibility to contact **the testing department** three weeks after the final filing date if he/she has not received his/her notice.

Applications are available at <https://jobs.ca.gov/pdf/std678.pdf>, California Department of Human Resources (CalHR) offices, and local offices of the Employment Development Department.

If you meet the requirements stated on this bulletin, you may take this examination, which is competitive. Possession of the entrance requirement does not assure a place on the eligible list. Your performance in the examination will be compared with the performance of the others who take this test, and all candidates who pass will be ranked according to their scores.

Caltrans reserves the right to revise the examination plan to better meet the needs of the service, if the circumstances under which this examination was planned change. Such revision will be in accordance with civil service laws and rules and all competitors will be notified.

General Qualifications: Candidates must possess essential personal qualifications including integrity, initiative, dependability, good judgment, and the ability to work cooperatively with others; and a state of health consistent with the ability to perform the assigned duties of the class. A medical examination may be required. In open examinations, investigation may be made of employment records and personal history and fingerprinting may be required.

Eligible Lists: Eligible lists established by competitive examination, regardless of date, must be used in the following order: 1) sub-divisional promotional, 2) departmental promotional, 3) multi-departmental promotional, 4) service-wide promotional, 5) departmental open, 6) open. When there are two lists of the same kind, the older must be used first. Eligible lists will expire in one to four years unless otherwise stated on the bulletin.

Promotional Examinations Only: Competition is limited to employees who have a permanent civil service appointment and military veterans that meet all the minimum qualifications. Under certain circumstances, other employees may be allowed to compete under provisions of Rules 234, 235, and 235.2. State Personnel Board Rules

233, 234, 235, 235.2, and 237 contain provisions regarding civil service status and eligibility for promotional examinations.

TTY is Telecommunications Device for the Deaf and is reachable only from phones equipped with a TTY Device.

For individuals with disabilities, this document may be available upon request in alternate formats. To obtain an alternate format, please call or write to Caltrans, Office of Examinations and Recruitment Services, P.O. Box 168036, MS 86, Sacramento, CA 95816. Voice (916) 227-7858 California Relay Service: Voice 1-800-735-2922 or TTY 1-800-734-2929.