

MATERIALS TESTING ENGINEERING ASSISTANT, 7971
MATERIALS TESTING ENGINEERING ASSOCIATE, 7972
MATERIALS TESTING ENGINEER, 7973

Summary of Duties : Performs professional engineering work in making chemical analyses and physical tests of supplies, materials, and equipment; or supervises such work; and does related work.

Distinguishing Features : A Materials Testing Engineering Assistant performs various physical tests on engineering materials, makes chemical analyses of organic and inorganic materials, and applies established chemical and physical testing procedures to a variety of engineering problems. The work of an employee in this class is normally routine and closely supervised. A Materials Testing Engineering Assistant may supervise one or more technical employees.

A Materials Testing Engineering Associate may be responsible for one or more testing sections and maintains schedules and work flow. An employee in this class supervises Materials Testing Engineering Assistants and technical employees and assures that appropriate testing methods are employed. In a small testing program, an Associate performs a variety of moderately difficult materials testing work. An employee of this class works out details of testing programs after a Materials Testing Engineer has outlined the approach in general terms.

A Materials Testing Engineer, plans, coordinates, and directs the work of a large group of professional and technical personnel. An employee in this class is both administratively and technically responsible for the work of one or more laboratories in testing a variety of materials and developing techniques for processing materials to acquire desired properties. An employee of this class receives projects in general terms and determines methods and procedures to be used in experimental or nonstandardized tests.

Examples of Duties : Materials Testing Engineering Assistant : Makes standard chemical analyses and physical tests of cement, concrete, pipe, rock, sand, soil, protective coatings and a wide variety of other materials and equipment to assure conformance to specifications and to determine their properties for design and construction purposes; interprets and reports test results;

Performs or supervises chemical and metallurgical analyses of construction and maintenance materials, including ferrous and nonferrous metals, textiles, and petroleum products; takes samples of noxious or hazardous gases to determine the source and suggests corrective measures to alleviate the condition; assists in testing the effectiveness of large incineration operations; supervises test hole drilling operations; keeps records and makes oral and

written reports of tests made; calibrates apparatus and gauges; and assists in investigating new materials and conducting research in construction materials.

Materials Testing Engineering Associate : Supervises and coordinates the testing of a wide variety of materials; prepares technical reports and checks test records and reports for correctness and accuracy; makes the more difficult calculations based on data submitted; and supervises the calibration of apparatus and gauges;

Prepares instructions which clarify, interpret, expand, supplement, or replace tests prescribed by City specifications or testing organizations such as the American Society for Testing and Materials; develops testing procedures; designs, supervises, or assists in the building of new testing equipment and participates in meetings to resolve problems related to materials.

Materials Testing Engineer : Coordinates and directs the work of various sections of a laboratory testing program engaged in testing a variety of supplies, materials, and equipment; determines test procedures to be used in unusual or especially difficult cases; reviews test results for technical correctness, interprets findings and makes recommendation as to specifications for materials; directs or performs special research work to determine the most appropriate materials and treatments for materials to meet special environmental conditions; prepares technical papers and reports on the results of experimental work; may supervise another Materials Testing Engineer; may direct the measurement and testing of oil pumped from wells on City property;

Confers with Department officials, other engineers and representatives of outside firms regarding test results or services which can be rendered by the laboratory; prepares correspondence relative to the activities of the laboratories; and establishes internal procedures for, and supervises the requisitioning, receiving, and controlling of supplies and materials used by the laboratories.

All Classes : May occasionally be assigned to other duties for training purposes or to meet technological changes or emergencies.

Qualifications :

Materials
Materials
Testing
Testing
Materials
Engineering
Engineering
Testing

Knowledges Assistant
Associate
Engineer

Chemistry, especially the procedures relevant to quantitative and qualitative analysis; General Working Good

Physics, especially with regard to the strength of materials and the laws of mechanics; Working Good Good

Mathematics, as used in evaluating the results of tests of materials; Working Good Good

Safety principles and practices; Working Good Good

Standards and standard testing methods of the American Society for Testing and Materials; Working Good Good

Types and characteristics of commonly used construction and maintenance materials; General Working Good

Standard sources of information pertaining to materials testing; General Working Good

Laboratory testing methods
apparatus, and techniques;

General
Working
Good

Laws and regulations related
to equal employment opportu-
nity and affirmative action;

General
Working
Working

Administrative and super-
visory techniques and methods
applicable to operating and
carrying out a comprehensive
materials testing program;

General
Good

City personnel rules, poli-
cies, and procedures;

General
General

Materials
Materials

<u>Knowledges (Cont)</u>	<u>Testing Engineering Assistant</u>	<u>Testing Engineering Associate</u>	<u>Materials Testing Engineer</u>
Memoranda of Understanding as applied to subordinate personnel.		General	General

Abilities

Apply standard testing
methods to materials;

x

x

x

Make clear and concise test
reports both orally and in
writing;

x

x

x

Develop and apply testing
methods to meet new situa-
tions or materials;

x

x

Supervise a small group of
technical employees;

x

Supervise technical and pro-

Professional employees; x x

Plan, lay out, direct, and review the work of subprofessional and professional employees; x x

Deal tactfully and effectively with employees, officials, and the public. x x x

Graduation from a recognized four-year college or university with specialization in chemistry, physics, or engineering or possession of an Engineer-in-Training Certificate issued by the California State Board of Registration for Professional Engineers is required for Materials Testing Engineering Assistant. n g l

Two years of professional engineering experience at the level of Materials Testing Engineering Assistant or two years professional experience in chemical analysis at least at the level of Chemist is required for Materials Testing Engineering Associate. However, one year of graduate work in engineering or related science may be substituted for one year of the above experience lacking. g t g s

Two years of professional engineering experience at the level of Materials Testing Engineering Associate is required for Materials Testing Engineer. g

Registration : A valid Certificate of Registration as a Professional Engineer issued by the California State Board of Registration for Professional Engineers is required for Materials Testing Engineer.

License : All Classes : A valid California driver's license is required.

Physical Requirements : All Classes : Strength to perform average lifting up to 15 pounds and occasionally over 25 pounds; good speaking and hearing ability; and good eyesight. Persons with handicaps may be capable of performing the duties of some of the positions in these classes. Such determination must be made by the medical examiner on an individual basis. l

As provided by Civil Service Commission Rule 2.5 and Section 4.55 of the Administrative Code, this specification is descriptive, explanatory and not restrictive. It is not intended to declare what the duties and responsibilities of any position shall be. e t d