

MATERIALS TESTING TECHNICIAN, 7968

Summary of Duties : Takes samples and makes routine standardized physical and chemical tests in the field or laboratory of soils, petroleum products, construction materials, sewage, and industrial wastes; inspects pipe fabrication and concrete and asphalt batching; or performs the more difficult work and may supervise the above work; and does related work.

Distinguishing Features : A Materials Testing Technician follows standardized procedures or detailed instructions. Most of the work involves sampling and making routine tests of a variety of physical and chemical materials. Work varying from the normal routine is closely supervised. This class is distinguished from Laboratory Technician in that the latter conducts bacteriological analysis of water and sewage samples for deleterious content and investigates customer complaints of water quality.

A Materials Testing Technician may be assigned to perform the more difficult tests and may exercise technical supervision over lower-level Materials Testing Technicians. Assignments are usually received as a statement of desired results, within which specific testing programs must be developed depending on the available time and personnel. Unique testing programs may require development of standards and procedures. Materials Testing Technicians assigned at higher levels are not closely supervised and review of their work is based on the accuracy of results, conformance to sound testing principles and procedures, quality of the test reports, and the time required to complete assignments.

Examples of Duties : Takes field samples of soil, rock, concrete, steel, cement, and asphalt; prepares and tests soil samples to determine compaction, consolidation, shear strength, liquid and plastic limits, moisture content, specific gravity, percolation, earth resistivity and percent composition; tests asphaltic concrete and other bituminous compounds and binders for percent composition, penetration and abrasion resistance, flash point, ductility, heat loss, viscosity and solubility; tests cement samples for setting time, tensile strength, soundness, free alkali, and normal consistency; prepares concrete samples and makes slump and compressive strength tests; tests aggregate for reactivity, durability, and grading;

Tests steel for tensile strength, cold-bend resistance, and ductility; tests paints and coal tar enamels using standard protective coating tests such as viscosity, weight per gallon, and acid and alkali resistance; tests such City-purchased hardware items as rope, wire, telephone poles, soil anchors, conduits, and insulators to determine adherence to specifications and safety standards; tests lubricating oils and greases for flash point and viscosity; tests personal safety

equipment and devices, such as belts, ropes, ladders, and hats for safety factor and maximum strength; tests plastics for a variety of piping and structural uses; assists in sampling and analyzing sewage and industrial wastes to determine acids, sulphides, protein, fat, and other chemical and solids content; may conduct laboratory or field tests regarding corrosive properties or electrolytic activity; may test galvanized coatings on steel for thickness and completeness; conducts tests according to department, ASTM, or other standards;

Inspects asphalt and concrete batching operations; explains City testing policies and procedures to contractors in the field; inspects water and sewer pipe at shipping points to insure that pipe, protective coatings, welds, and appurtenances conform to specification standards; makes crushing and hydrostatic pressure tests on clay, concrete, and steel pipe; obtains and computes data from tests and prepares report forms and graphs; and does clean-up and minor repair work in maintaining a laboratory and its equipment.

May perform or supervise the above work; conducts nonstandard tests on construction or maintenance materials such as alloys, sealing compounds, cleaners, rubber and other insulating material; tests and certifies welding coupons; tests galvanized coatings on steel for thickness and completeness; may install, test and adjust cathodic protective devices; may test fills and subgrades for bearing capacity; may perform mechanical and electrical tests on suspension insulators to determine physical and voltage load limits, and measure pulling or load tension of power cables; may conduct field and laboratory tests related to corrosion and electrolytic action on water distribution and storage facilities; may conduct physical testing in research studies of experimental materials and processes, such as epoxy resins in piling reconstruction, thermodynamic properties of fill material, and highly compacted and asphalt-stabilized soils; meets with manufacturers' representatives in evaluation testing of proposed City purchases; may calibrate jacks, strain gauges, and dynamometers; may design and build simple laboratory apparatus; records and computes test data and prepares reports; and may occasionally be assigned to other duties for training purposes or to meet technological changes or emergencies.

Qualifications : A general knowledge of chemical and physical laboratory procedures, techniques, and equipment; field sampling and testing procedures, techniques, and equipment; a general knowledge of general science and basic mathematics through algebra; a general knowledge of physics, especially the laws of mechanics; a general knowledge of characteristics and uses of engineering materials; the ability to follow written and oral instructions; the ability to read blueprints and survey charts; the ability to explain testing methods and policies to the public; and the ability to use physical and chemical test apparatus, pressure and tensile presses, and common hand and power tools.

Successful completion of one-year high school or college level courses

in physics and/or chemistry is required for Materials Testing Technician.

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

Physical Requirements : Strength to perform average lifting up to 35 pounds and occasionally over 70 pounds; body agility and equilibrium involved in activities such as climbing and balancing under precarious conditions; back and leg coordination involved in activities such as stooping, kneeling, crouching, and crawling to an unusual extent; good speaking and hearing ability; and good eyesight.

Persons with medical limitations may, with reasonable accommodations, be capable of performing the duties of some of the positions in this class. Such determination must be made on an individual basis in light of the person's limitations, the requirements of the position, and the appointing authority's ability to effect reasonable accommodations to the limitations.

As provided in 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.