

County of Humboldt Job Specification
MATERIALS TESTING TECHNICIAN I/II
Classification 0312A/B



DEFINITION

Under direct or general supervision, performs a variety of engineering support tasks related to sampling, testing, and analyzing construction materials and mixes; provides technical advice to the public; and performs related duties as assigned.

SUPERVISION RECEIVED AND EXERCISED

Receives immediate (Materials Testing Technician I) or general (Materials Testing Technician II) supervision from assigned management/supervisory staff. Exercises no direct supervision of staff.

CLASS CHARACTERISTICS

Materials Testing Technician I: This is the entry-level classification in the Materials Testing Technician series. Initially under close supervision, incumbents learn and perform routine work in one or more areas of office engineering, field engineering, and materials testing. As experience is gained, assignments become more varied, complex, and difficult; close supervision and frequent review of work lessen as an incumbent demonstrates skill to perform the work independently. Positions at this level usually perform most of the duties required of the positions at the Engineering Technician II level but are not expected to function at the same skill level and usually exercise less independent discretion and judgment in matters related to work procedures and methods. Work is usually supervised while in progress and fits an established structure or pattern. Exceptions or changes in procedures are explained in detail as they arise.

Materials Testing Technician II: This is the journey-level classification in the Materials Testing Technician series. Positions at this level are distinguished from the Materials Technician I by the performance of the full range of duties as assigned, working independently, and exercising judgment and initiative. Positions at this level receive only occasional instruction or assistance as new or unusual situations arise and are fully aware of the operating procedures and policies of the work unit.

Positions in the Materials Testing Technician I/II classification series are flexibly staffed and positions at the II level are typically filled by advancement from the I level after gaining the knowledge, skill, and experience which meet the qualifications for, and after demonstrating the ability to perform the work of, the higher-level classification.

EXAMPLES OF TYPICAL JOB FUNCTIONS (Illustrative Only)

Management reserves the right to add, modify, change, or rescind the work assignment of different positions.

Some duties, knowledge, skills, and abilities may be performed in a learning capacity for entry-level (I Level) positions.

- Performs a variety of basic paraprofessional engineering support work in the design and construction of public works, roads, bridges, drainage, capital improvements projects, and related areas.
- Samples, tests, and analyzes construction soils, aggregate base and fill, concrete mix, asphalt, and other materials, both in the laboratory and in the field, to ensure quality control of the construction process; determines if soils and materials meet standards for acceptance.
- Performs soil testing including, but not limited to classification, compaction, shear strength, consolidation, and permeability tests.
- Prepares soil samples by drying, quartering, sieving, trimming or compaction as required.
- Calculates soil and cement mix design ratios by conducting aggregate testing procedures, including gradation tests, sand equivalent tests, and specific gravity tests.
- Conducts aggregate testing including, but not limited to grading/sieve analyses, flakiness and elongation index tests, and abrasion and fines value tests.
- Determines specific gravity and water absorption and assesses aggregate shape, surface texture, and cleanliness.
- Casts, cures, and labels concrete cubes/cylinders/cores.
- Performs compressive strength, flexural strength, and tensile splitting tests.
- Conducts concrete testing including, but not limited to slump, flow table, air content, and density tests.
- Checks fresh concrete temperature, consistency, and conformity to mix specifications.
- Collects samples of soil, aggregates, concrete, asphalt, and other materials from construction sites.
- Carries out plate load tests and other geotechnical field assessments.
- Extracts asphalt cores for density and thickness analysis.
- Records GPS coordinates, chainage, and sampling locations.
- Ensures proper labelling, traceability, and chain-of-custody for all samples.
- Maintains appropriate sample storage conditions and retention periods.
- Disposes of samples according to laboratory policy and environmental regulations.
- Prepares accurate test certificates and reports for internal and external stakeholders and ensures all data meets traceability requirements.
- Operates, maintains, and monitors equipment and instruments used in the analysis of soils and other construction materials; monitors equipment used in the mixing of asphaltic concrete and soil cement.
- Establishes and coordinates materials testing schedules with contractors, suppliers, other agencies, and County staff.
- Provides information to the public, contractors, engineers, developers, and representatives of other government agencies.
- Utilizes a wide variety of engineering testing tools and equipment; calibrates, maintains, and performs basic repairs to utilized tools and equipment.
- Maintains cleanliness and organization of the laboratory and storage areas and manages inventory of consumables.
- Makes a variety of engineering and mathematical computations and calculations.
- Performs other related duties as assigned.

The requirements listed below are representative of the knowledge and ability required. Reasonable accommodations may be made to enable qualified individuals with disabilities to perform the essential functions.

QUALIFICATIONS

Knowledge of:

- Engineering principles, practices, and methods applicable to office and field work involving the design, construction, and maintenance of public works projects including materials testing and field inspection.
- Basic design and construction practices and methods of streets, underground facilities, and related public works infrastructure.
- Engineering plan types, review practices, permit filing, and approval procedures.
- Principles and practices of technical civil engineering drafting and surveying support.
- Drafting and surveying equipment, computers, principles, problems, techniques, and practices.
- Engineering mathematics, including geometry, algebra and trigonometry.
- Principles and practices of contract and project administration.
- Applicable federal, state, and local laws, codes, and ordinances relevant to the area(s) of responsibility.
- The properties and composition of materials used in public works engineering projects.
- Technical report writing practices and procedures.
- Principles and procedures of recordkeeping.
- Principles and techniques for working with groups and fostering effective team interaction to ensure teamwork is conducted smoothly.
- Techniques for providing a high level of customer service by effectively dealing with the public, vendors, contractors, and County staff.
- The structure and content of the English language, including the meaning and spelling of words, rules of composition, and grammar.
- Modern equipment and communication tools used for business functions and program, project, and task coordination, including computers and software programs relevant to work performed.

Ability to:

- Modify engineering drawings, topographic maps, improvement plans, and illustrative graphics using GIS software.
- Read and interpret engineering plans, technical drawings, specifications, and subdivision maps.
- Inspect construction work for compliance with plans and specifications.
- Perform standard engineering design under professional engineering supervision.
- Make mathematical calculations and accurate engineering computations and drawings.
- Make and record accurate field engineering observations.
- Use engineering, drafting, and surveying instruments and equipment.
- Prepare clear and concise reports, permit applications, correspondence, policies, procedures, and other written material.

- Prepare a variety of plans, specifications, maps, graphic materials, cost estimates, and technical engineering reports.
- Research and analyze legal descriptions related to properties.
- Understand and follow complex technical instructions.
- Conduct research and compile accurate data in areas of responsibility.
- Understand, interpret, and apply all pertinent laws, codes, regulations, policies and procedures, and standards relevant to work performed.
- Independently organize work, set priorities, meet critical deadlines, and follow-up on assignments.
- Effectively use computer systems, software applications relevant to work performed, and modern business equipment to perform a variety of work tasks.
- Communicate clearly and concisely, both orally and in writing, using appropriate English grammar and syntax.
- Establish, maintain, and foster positive and effective working relationships with those contacted in the course of work.

Minimum Qualifications:

Any combination of training and experience that would provide the required knowledge, skills, and abilities is qualifying. A typical way to obtain the required qualifications would be:

Equivalent to an associate degree with major coursework in civil engineering, drafting, surveying, mathematics, or a related field

and

Materials Testing Technician I: None.

Materials Testing Technician II: Two (2) years of experience performing increasingly responsible engineering technical support work at a level equivalent to the County's classification of Materials Testing Technician I.

Licenses and Certifications:

- Must possess a valid US driver's license upon date of application. Must obtain California driver's license following hire date per California DMV regulations.

PHYSICAL DEMANDS

- Mobility to work in a standard office setting and use standard office equipment, including a computer; to operate a motor vehicle and visit various County sites (use only for driving positions); primarily a sedentary office classification although standing in work areas and walking between work areas may be required; occasionally bend, stoop, kneel, reach, push, and pull drawers open and closed to retrieve and file information; ability to lift, carry, push, and pull materials and objects up to 50 pounds in all cases with the use of proper equipment and/or assistance from other staff.
- Vision to read printed materials and a computer screen.

- Hearing and speech to communicate in person and over the telephone.
- Finger dexterity is needed to access, enter, and retrieve data using a computer keyboard or calculator and to operate standard office equipment.

When assigned to field inspection:

- Mobility to work in changing site conditions; to sit, stand, and walk on level, uneven, or slippery surfaces; to reach, twist, turn, kneel, and bend, to climb and descend ladders; and to operate a motor vehicle and visit various County sites.
- Strength and stamina to perform light to medium physical work; lift, carry, push, and pull materials and objects averaging 15 pounds, or heavier weights up to 50 pounds, in all cases with the use of proper equipment and/or assistance from other staff.
- Vision to inspect site conditions and work in progress.
- Fieldwork requiring frequent walking in operational areas to identify problems or hazards, with exposure to hazardous materials in some site locations.

ENVIRONMENTAL CONDITIONS

- Office environment with moderate noise levels, controlled temperature conditions, and no direct exposure to hazardous physical substances.
- Also includes field work with exposure to loud noise levels, cold and hot temperatures, inclement weather conditions, road hazards, vibration, chemicals, mechanical and/or electrical hazards, and hazardous physical substances and fumes.
- Employees may interact with upset staff and/or public and private representatives in interpreting and enforcing departmental policies and procedures.

ADDITIONAL REQUIREMENTS

Some departments may require pre-employment screening measures before an offer of employment can be made (i.e. background screening, physical examination, etc.).