MATERIALS TECHNICIAN

JOB DESCRIPTION

Classification Responsibilities: A Materials Technician is responsible for performing a variety of routine materials testing work in the field and laboratory; performs related duties as required.

Distinguishing Features: An employee of this class conducts a wide variety of materials testing in addition to some limited public works inspections. The materials' testing is conducted primarily in the field, but can alternate between the lab and the field, depending upon need. Generally, an employee of this class supports the City's Construction Inspectors for contract and private development work to ensure quality assurance. Some duties include: performing moisture and compaction tests using a Nuclear Densimeter or sand cone device, obtaining representative field samples, and performing a variety of tests on concrete materials to determine temperature, unit weight, slump, yield, and air entrainment. The work also involves working in close proximity to heavy construction equipment, standing and climbing in and out of deep trenches, exposure to hazardous materials, chemicals, and dust, and working during inclement weather conditions. Incumbents are required to use appropriate safety equipment and procedures in performing assignments. A Materials Technician reports to the Chief Materials Technician who reviews work through conferences, observation of work performed, and overall results achieved. This class is FLSA nonexempt.

QUALIFICATIONS

Employee Values: All employees of the City of Mesa are expected to uphold and exhibit the City's shared employee values of Knowledge, Respect, and Integrity.

Minimum Qualifications Required. Requires graduation from high school or GED. A minimum of one year of building construction, construction inspection, paraprofessional engineering work, or work involving construction materials testing.

Special Requirements. Must possess a valid Class D Arizona Driver's License by hire date. Must have the following certifications within one year of hire: Concrete Field Testing Technician Grade I by the American Concrete Institute (ACI), Field soils and asphalt by Arizona Technical Institute, and Radiation Safety and Portable Nuclear Gauge User Safety.

Substance Abuse Testing. Due to the safety and/or security sensitive nature of this classification, individuals shall be subject to pre-employment or pre-placement alcohol, drug and/or controlled substance testing as outlined in City policy and procedures.

Preferred/Desirable Qualification. Public Works inspections experience is desirable.

ESSENTIAL FUNCTIONS

Communication: Communicates with the general public, other City employees, vendors, management, and contractors in order to relay/review job progress, results of lab/field tests, and scheduling of work. Prepares test results documentation to relay job progress and describe unusual job site conditions.

Manual/Physical: Reviews the work products of others to ensure compliance with standard operation procedures, federal and state regulations, (examples: Federal Aviation Association [FAA], Maricopa Association of Governments [MAG], Arizona Department of Transportation [ADOT]), or other standards or guidelines (American Society for Testing Materials [ASTM], ACI, American Association of State Highway and Transportation Officials [AASHTO], Arizona Rock Products Association [ARPA], East Valley Asphalt Committee [EVAC], etc.) Inspects, monitors, and evaluates information and work-related conditions, (examples: materials qualifications and placement of soil, aggregate, concrete, asphalt, etc.), to determine compliance with federal, state, and other standards and guidelines. Distinguishes colors to determine conditioning of moisture in soils and aggregate and oil binder of asphalt. Detects toxic gases for chemicals in the field and lab. Detects traffic sounds when working near moving traffic, backup warning devices when working around moving equipment, or other warning signs when working near construction equipment. Operates a pickup truck or van requiring a Valid Class D Arizona Driver's License to transfer needed equipment for sampling and testing at various job sites. Operates power-driven machinery such as a jackhammer, tamper, or core rig to obtain asphalt, concrete, and shotcrete samples for depth measurements, lab testing, etc. Uses common hand tools, such as a hammer, saw, screwdriver, or other tools to sample/test construction. Operates a variety of standard office equipment, (example: calculator) to verify computations of test results and measurements. Enters data or information into a personal computer to print test results. Prepares and/or updates schedules or similar charts to schedule jobs and verify testing/sampling locations. Moves soils, asphalt, concrete samples, etc., from one place to another using a handcart, wheelbarrow, etc. Digs up ground using a pick, shovel, spade, or jackhammer to obtain samples of construction materials. Moves silica sand (100 pounds), using a cart or other aid to assist with the lifting, 5 gallon buckets of soil and aggregate samples (35 pounds) for distances of up to 5 feet. Cleans work area and equipment. Works with cleaning fluids, agents, and chemicals to remove asphalt film from equipment, etc. Sets up traffic cones to conform with safety standards while working in traffic areas. Works in a variety of weather conditions while performing routine sampling and testing of construction materials. Works in small, cramped areas while performing density testing and lab work. Works in shored trenches of 0-40 feet. Meets scheduling and attendance requirements.

Mental: Plans and organizes own work schedule with inspectors and contractors. Prioritizes and assigns work to personnel and prioritizes own field sampling and testing work. Coordinates sampling and testing with other City departments, other cities, inspectors, contractors, suppliers, supervisors, etc. Performs mathematical calculations and statistical computations of field and lab test results for history data of jobs and suppliers. Comprehends and makes inferences from written material. Understands and interprets schematic drawings to locate and record where sampling/testing was obtained. Learns job-related material through on-the-job training and in a classroom setting regarding field and lab sampling and testing procedures.

Knowledge/Skills/Abilities:

Knowledge of:

materials used on City construction projects and new subdivisions;
ASTM and AASHTO standards and MAG specifications;
the properties, characteristics, strengths, and weaknesses of the materials used in public works

construction;
basic laboratory and field tests required for standard materials testing;
mechanical soil properties;
civil engineering and construction related terminology;
basic mathematics including fractions, percentages, ratios, areas, and simple algebra;
MAG standards, specifications and details for public works projects; and
general contract administration practices and procedures.

Skills in:

use of proctors when sampling soils; and
use of materials testing equipment such as the Nuclear Densimeter, penetrometer (for mortar testing), scales and balances, sieves, extractors, core apparatus, speedy moisture kit, and sand cone equipment.

Ability to:

perform nuclear density tests in order to determine the in-place density of the material being tested (examples: soil, asphaltic concrete) and moisture content;
test unit weights, air voids, and stabilities in order to determine whether the materials being placed (examples: asphaltic concrete) meet the MAG requirements, contract specifications, and City of Mesa standards;
perform liquid limit and plasticity limit tests to determine if soil is suitable for specific functions;
perform sand equivalency tests on fine aggregate sand to determine if there is an excessive clay coating which would prevent the asphalt from sticking to the sand;
perform the full range of testing on soils, slurry seal, mortar, grout, and chip seal including speedy moisture tests, sieve gradations, sand cone densities, etc.;
compute percentages, ratios, and proportions of materials being tested;
prepare clear and concise daily logs, computation sheets, reports, etc.;
record test results and advise contractor or the City's Construction Inspectors of results;
read and understand engineering plans, specifications, and details for quality assurance and to determine locations and materials criteria;
work effectively in the field with minimal supervision;
work effectively with contractors and construction personnel under such circumstances as conflict of values and short time frames;
coordinate work sequences and schedules with contractors, utilities, and other City departments;
obtain a nuclear density gauge certification;
lift, carry, and push 100 pounds (examples: five gallon buckets of concrete, wheelbarrows full of concrete or ABC, etc.);
enter confined spaces such as manholes, pipelines, tanks, etc.;
climb structures (example: scaffolding) to 20 feet above ground;
go up in elevators, manlifts, and buckets to 50 feet above ground;
use a shovel to obtain samples of materials for testing;
turn a valve key to operate water/gas valves, fire hydrants, etc.;
work in a hot, dusty environment, often standing for periods of two hours or more around construction equipment;
establish and maintain effective working relationships with supervisors and coworkers;
interact with contractors/construction personnel to assure work activities meet required quality

standards; and
coordinate and inform various City staff, citizens, etc., on status of work.

The duties listed above are intended only as general illustrations of the various types of work that may be performed. Specific statements of duties not included does not exclude them from the position if the work is similar, related, or a logical assignment to the position. Job descriptions are subject to change by the City as the needs of the City and requirements of this job change.

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EP/mm/kg

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JOB FCTN-TEC	SWORN-No
INCREMENTS 64-200	