

IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES ▼  
HUMAN RESOURCES ENTERPRISE  
MATERIALS TECHNICIAN 3

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**DEFINITION**

Performs technical on-site field or technical laboratory work in the sampling, testing, and inspection of materials used in highway construction and maintenance projects; performs related work as required.

*The Work Examples and Competencies listed are for illustrative purposes only and not intended to be the primary basis for position classification decisions.*

**WORK EXAMPLES**

Performs materials sampling, inspection, and testing activities in the central laboratory or assigned field area in order to assure compliance with all requirements for sampling and testing through the use of complex plans and specifications.

Determines by using various testing devices and techniques: the deflection of the sub-grade, sub-base, or surface courses; the rideability characteristics of road surfaces; the profile of flexible and rigid bases or surfaces; the load bearing capacity of pilings on construction sites; and the skid resistance of both old and new road surfaces.

Calibrates equipment utilized in the field and central laboratory testing and inspection of materials.

Gathers samples and data pertaining to the consistency and depth of Portland cement and asphaltic concrete pavements.

Maintains records of materials sampled to include the date, time, location, type of material, and any tests required to document results.

Inspects operations in an assigned group of quarries to insure adherence to specification limits; conducts progress inspections and final sampling and testing procedures.

Inspects and grades aggregates produced in an assigned area.

Performs a variety of testing and inspection activities on materials and/or products such as: aggregates, soil samples, asphalt concrete, Portland cement concrete, metals, paints, textiles, and automotive products to determine the various measurements and physical properties specified for suitability, safety, and effectiveness of use in the construction and maintenance of highways.

Designated positions perform duties related to snow and ice removal, which include: accessing the Roadway Weather Information System (RWIS), weather reports, and other related computer software applications to record and receive data and make decisions regarding times, temperatures, weather conditions, and material usage to operate snow and ice removal equipment such as, but not limited to single or tandem axle dump trucks that may be equipped with tailgate or hopper spreader, straight blades or V-plows, wing plows, and underside ice blades; includes preparing and spreading abrasives and de-icing chemicals on the roadway by using a loader for mixing abrasives and chemicals; may perform other maintenance duties as assigned.

**COMPETENCIES REQUIRED**

Knowledge of the standards and specifications involved in the testing and inspection of materials used in the construction and maintenance of highways.

Knowledge of the basic principles of physical science as required by specific work assignments.

Knowledge of the equipment and procedures used by materials producers.

Knowledge of the occupational hazards and safety precautions applicable to the work.

Ability to occasionally (1-33% of the time) lift/lower, carry and push/pull various amounts of force within the "heavy work" as defined by the US Department of Labor; team lift or mechanical assist recommended

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for weights over 75 pounds. Related work examples: 70 pound bag of aggregate, 60 pound asphalt hot box, 118 pound beam breaker, and 80 pound concrete beam in mold, etc.

Ability to work outdoors in all types of weather conditions, day or night, in normal and emergency situations.

Ability to climb, kneel, crouch, crawl, stoop and twist and perform duties using appropriate tools and equipment within safety standards.

Ability to walk over uneven ground.

Ability to drive vehicles in a safe and conscientious manner.

Ability to read and write English.

Ability to understand and follow verbal and written directions/instructions given in English.

Ability to operate computers and/or other electronic devices and use programs/applications to conduct Department of Transportation business.

Ability to receive, record, and communicate data or observations accurately and legibly.

Ability to apply the basic principles of physical science as required by specific work assignments.

Ability to operate, maintain, and calibrate equipment used in the materials sampling and analysis process.

Ability to accurately perform mathematic calculations.

Ability to perform basic scientific tests to determine the physical properties of materials used in the construction and maintenance of highways.

Designated positions will also require the:

- Knowledge of effects of weather on road surfaces.

- Knowledge of winter maintenance operations, such as anti-icing and de-icing principles.

- Ability to drive equipment with a manual transmission and clutch.

- Ability to appropriately use anti-icing or de-icing materials.

- Skill in use of Roadway Weather Information System (RWIS), weather reports and other related computer software applications.

Displays high standards of ethical conduct. Refrains from dishonest behavior.

Works and communicates with all clients and customers providing polite, quality professional service.

Displays a high level of initiative, effort, attention to detail and commitment by completing assignments efficiently with minimal supervision.

Follows policy, cooperates with supervisors and aligns behavior with the goals of the organization.

Fosters and facilitates cooperation, pride, trust, group identity and team spirit throughout the organization.

Exchanges information with individuals or groups effectively by listening and responding appropriately.

### **EDUCATION, EXPERIENCE, AND SPECIAL REQUIREMENTS**

The equivalent of three years of full-time experience in the sampling, testing, and/or inspection of materials used in highway construction and maintenance projects;

OR

an equivalent combination of education and experience substituting the equivalent of one year (30 semester hours or the equivalent) of college, university, or technical school course work with an emphasis in mathematics, engineering, metallurgy, geology, or chemistry for each year of the required work experience to a maximum substitution of two years.

**NECESSARY SPECIAL REQUIREMENTS**

Designated positions in this class require possession of a valid Commercial Learner's Permit upon hire. Within a timeframe determined by the appointing authority, a valid Class A Commercial Driver's License with the required endorsements and applicable restrictions must be obtained and subsequently maintained in order to continue employment.

If a CDL is not required, designated positions are required to have and maintain a minimum of a valid Class C Non-Commercial Operator's License.

In conjunction with Title 49 of the Code of Federal Regulations (parts 40 and 382), designated positions in this job class require a pre-employment drug screen and will require ongoing participation in the employer's random drug and alcohol testing program and will be subject to the regulations regarding the Federal drug and alcohol testing program.

Prior to starting employment, all persons are required to have a post offer pre-employment physical verifying the physical ability to perform the duties described.

Positions require certification for testing materials and operating specialized equipment as required by the Iowa Department of Transportation's Technical Training and Certification Program for Highway Materials and Construction; and/or other certifications as required.

**NOTES**

Employees must be able to travel and may be required to stay away from home overnight during assignments.

Employees in designated positions must be able to work up to 16 consecutive hours.

Effective Date: 11/17 SA