

Iowa Department of Administrative Services – Human Resources Enterprise  
Job Classification Description

## Design Technician

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### Definition

Performs journey-level paraprofessional engineering design work of a broad scope which impacts all areas of a single project; performs related work as required.

*The work examples and competencies listed below are for illustrative purposes only and not intended to be the primary basis for position classification decisions.*

### Work Examples

Inputs design criteria and data to create, maintain, and adjust files for the creation of project plans.

Calculates, modifies, or otherwise determines geometrics, rates of discharge, hydraulic data, quantities, types, and sizes of materials, land area, type, size, and locations of structures and other information as required for project assignments.

Prepares, selects, and/or modifies typicals, design standards, tabulations, bid items, reference notes, standards notations, and specialized design details to create plans in accordance with the project design concept.

Checks calculations and files detailed drawings, aerial photography, survey data, shop drawings, and finished plans or maps developed by co-workers, consultants, and contractors to ensure completeness, accuracy, and adherence to design concept, specifications, and contract provisions; identifies errors, problems, or non-standard situations and suggests alternate solutions.

Processes and edits survey data to create design files, and processes survey data into reports used by designers, planners, and others; lays out photogrammetry survey control.

Trains co-workers, workers in other departments, or consultants in specific work methods, techniques, computer software programs, automation tools, design policy, and other subject matter by reviewing specific questions with superiors, researching answers, and explaining their application and output.

Edits and graphically illustrates maps for display or reproductions of various transportation systems and cultural or relief features or details.

Performs soil analysis and slope stability analysis, computes foundation settlement, loading capacities, soil stresses under drainage, and stabilization designs, and determines the characteristics and conditions of various soil types so that they may be incorporated effectively and economically in project designs.

Researches historical information obtained from as-built road plans and courthouse records to determine property ownerships and existing right of way boundaries along existing and proposed highway centerlines on maps, plats, plans, and aerial photographs; assists in establishing the proposed right of way limits to construct and maintain the highways using road plans, cross-sections, and situation plans; transfers this information to files and data bases to be utilized in the right of way acquisition and design processes.

Performs calculations for pavement thickness designs and/or an economic analysis of alternate pavement types; adds, sorts, and analyzes data for use in pavement management.

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Provides technical assistance and support to users of drafting and design software; develops and implements custom automated drafting and design procedures under supervision; evaluates pros and cons of new releases of drafting and design software.

Reviews projects submitted for federal funding by local cities and counties; coordinates activities to ensure proper development and timely delivery of material to other offices and agencies for project approval.

## Competencies Required

### Knowledge:

- Engineering and Technology – The practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.
- Design – Design techniques, tools, and principles involved in production of precision technical plans, blueprints, drawings, and models.
- Mathematics – Arithmetic, algebra, geometry, calculus, statistics, and their applications.
- Building and Construction – Materials, methods, and the tools involved in the construction or repair of houses, buildings, or other structures such as highways and roads.
- Clerical Procedures – Word processing, managing files and records, designing forms, and other office procedures and terminology.

### Abilities:

- Deductive Reasoning – Apply general rules to specific problems to produce answers that make sense.
- Mathematical Reasoning – Choose the right mathematical methods or formulas to solve a problem.
- Written Comprehension – Read and understand information and ideas presented in writing.
- Oral Comprehension – Listen to and understand information and ideas presented through spoken words and sentences.
- Visualization – Imagine how something will look after it is moved around or when its parts are moved or rearranged.
- Information Ordering – Arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).
- Inductive Reasoning – Combine pieces of information to form general rules or conclusions.

### Skills:

- Critical Thinking – Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
- Active Listening – Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.

- Reading Comprehension – Understanding written sentences and paragraphs in work related documents.
- Speaking – Talking to others to convey information effectively.
- Writing – Communicating effectively in writing as appropriate for the needs of the audience.
- Active Learning – Understanding the implications of new information for both current and future problem-solving and decision-making.

### **Minimum Qualification Requirements**

Applicants must meet at least one of the following minimum requirements to qualify for positions in this job classification:

- 1) Graduation from high school (or GED equivalent), and experience equal to six years of full-time work in design drafting, cartography, photogrammetry, engineering survey, soils survey, land survey, or construction inspection.
- 2) All of the following (a and b):
  - a. Four years of full-time work experience in design drafting, cartography, photogrammetry, engineering survey, soils survey, land survey, or construction inspection; and
  - b. A total of two years of education and/or full-time experience (as described in number one), where thirty semester hours of accredited college or university course work in any field equals one year of full-time experience.
- 3) All of the following (a and b):
  - a. Four years of full-time work experience in design drafting, cartography, photogrammetry, engineering survey, soils survey, land survey, or construction inspection; and
  - b. A total of two years of education and/or full-time experience (as described in number one), where thirty semester hours of an accredited vocational program in engineering technology, design drafting, engineering survey, soils survey, land survey, construction inspection, or cartography equals two years of full-time experience.
- 4) Current, continuous experience in the state executive branch that includes eighteen months of full-time work as a Design Technician Associate.

*Effective date: 06/18 SA*