Class Code: 04372

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

Design Technician Specialist

Definition

Performs advanced paraprofessional engineering design and may perform lead worker functions that involve all areas of multiple projects or works on major projects involving legal and politically sensitive issues; operates a photogrammetric stereo plotter or accompanying computer systems programming or engineering problems and developing software solutions; 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

Assists supervisor by performing such duties as instructing employees, answering questions, distributing and balancing the workload, and checking work; may make suggestions on selection, promotions, and reassignments.

Provides technical review of design plans prepared by co-workers for proper design, documentation, and complete illustration of construction or repair projects.

Trains and instructs co-workers, workers in other offices, and design consultants in specific work methods, techniques, project criteria, Computer Aided Drafting and Design (CADD), various computer software packages, computer support systems, design policy, and other subject matter involved in project development.

Selects, reviews, develops, draws, edits, and/or modifies typicals, design standards, tabulations, bid items, reference notes, standard notations, specialized design details, and other details to create plans in accordance with the project design concept.

Checks calculations, detailed drawings, aerial photography, survey data, shop drawings, and finished plans or maps developed by co-workers, consultants, or 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.

Prepares feasibility studies to determine the proper economic and practical design procedures, policies, specifications, and details which are used in the design of transportation improvement projects.

Evaluates traffic accident histories for justification for utilization of safety funding for potential projects.

Selects and inputs design criteria and data; creates, maintains, and adjusts files to create project plans.

Develops, documents, tests, implements, and maintains computer applications and procedures to supplement drafting and design software.

Monitors and reviews the activities of engineering consultants to ensure successful completion of the contract objectives; coordinates consultants' activities to ensure proper development and timely delivery of information to other offices and agencies; reviews project plans, ensuring that the proposed design is consistent with the approval concept, current engineering design standards, and presents an effective, economical design solution to project objectives.

Receives and responds to questions from design consultants, government agencies, and other DOT offices which may require extensive research and require immediate attention.

Prepares engineering studies and evaluations involved in the development of transportation improvements projects from initial concept to the design stage with assistance from the project engineer.

Analyzes roadway and traffic characteristics to determine appropriate signing, pavement markings, and other traffic control devices in accordance with federal guidelines, policy, and administrative rules.

Coordinates, oversees, and participates in the development of contract signing and lighting plans for new freeway and expressway construction and for rehabilitation of existing freeway and expressway signing.

Prepares maps for display or reproduction to graphically illustrate various transportation systems and cultural or relief features or details.

Communicates with and coordinates input from co-workers, personnel in related offices, consultants, suppliers, various federal, state, and local agencies, and/or the public to assure complete project development; participates in public hearings, field exams, and other meetings to request information or answer questions concerning maps, plans, or guidelines.

Operates photogrammetric stereo plotter to produce computer-generated contours, cross sections, and planimetrics suitable to develop design plans; reviews photogrammetry survey control points selected by others; performs aerial triangulation, adjusts control point network, locates photo control pass points, and computes stereo plotter set up data for others.

Develops project concepts, location studies, and highway alignments to provide staff with facility options; prepares proposals which identify existing conditions, needs, and the effects of various options upon the environment and public.

Recommends safety improvements to reduce specific accident situations.

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 eight years of full-time work in design drafting, cartography, photogrammetry, or right of way.
2) All of the following (a and b):
    a. Six years of full-time work experience in design drafting, cartography, photogrammetry, or right of way; and
    b. A total of two years of education and/or full-time experience, where thirty semester hours of accredited college or university course work in any field equals one year of full-time experience in design drafting, cartography, photogrammetry, right of way, engineering survey, soils survey, land survey, or construction inspection.
3) All of the following (a and b):
    a. Six years of full-time work experience in design drafting, cartography, photogrammetry, or right of way; 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 in design drafting, cartography, photogrammetry, right of way, engineering survey, soils survey, land survey, or construction inspection.

4) Current, continuous experience in the state executive branch that includes one year of full-time work as a Design Technician.

Effective date: 06/18 SA