

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

Transportation Engineer

Definition

Performs professional engineering work in the planning, design, inspection, or implementation of transportation-related construction and maintenance projects and programs; may direct the activities of a squad or small section of technical engineering staff; 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

Performs a variety of assignments in the design of transportation-related structures, facilities, equipment, devices, or processes; investigates, analyzes, and determines conventional engineering needs and related design considerations; prepares specifications, cost estimates, and proposals.

Analyzes pertinent transportation engineering data and determines specific performance capacity and operating characteristics of facilities or structures; develops detailed designs covering site development, size and layout of structures, placement and treatment of materials in foundations, paving, placement of load- or stress-bearing structural members, or bituminous mix designs.

Performs on-site field examinations of proposed projects to determine adequacy of preliminary plans; conducts location studies and determines highway alignments.

Conducts data collection and analysis studies; determines data needs and processing requirements; analyzes raw and processed data for validity and subject matter interpretation; projects and forecasts data and conditions; summarizes and presents data for general use; catalogs, abstracts, and indexes information for retrieval and dissemination.

Recommends revisions to and develops performance criteria, test and inspection methods, and related data for the application of standards to transportation system enhancements or specific products and services.

Participates in the study and projection of present and future transportation system needs and the formulation of alternative policies and means of meeting these needs through appropriate/available resources; monitors contracted services; analyzes automation needs; designs, writes, and revises automated programs to improve efficiency.

Recommends alternative plans, policies, and programs based upon costs, benefits, and overall feasibility; evaluates program progress and ensures that plan objectives are realized.

Prepares recommendations and/or makes preliminary decisions that establish the basic content and character of programs and allocation of resources; integrates and coordinates the scheduling and accomplishment of various phases of work.

Competencies Required

Knowledge:

- Engineering and Technology – 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.
- Transportation – Principles and methods for moving people or goods by air, rail, sea, or road, including the relative costs and benefits.
- 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.
- Mathematics – Arithmetic, algebra, geometry, calculus, statistics, and applications.
- Customer Service – Principles and processes for providing customer services, including customer needs assessment, meeting quality standards for services, and evaluating customer satisfaction.

Abilities:

- Deductive Reasoning – Apply general rules to specific problems to produce answers that make sense.
- 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).
- Oral Comprehension – Listen to and understand information and ideas presented through spoken words and sentences.
- Problem Sensitivity – Tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.
- Written Comprehension – Read and understand information and ideas presented in writing.
- Mathematical Reasoning – Choose the right mathematical methods or formulas to solve a problem.

Skills:

- Complex Problem Solving – Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
- Critical Thinking – Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.
- Speaking – Talking to others to convey information effectively.
- Judgment and Decision Making – Considering the relative costs and benefits of potential actions to choose the most appropriate one.
- Operations Analysis – Analyzing needs and product requirements to create a design.
- Reading Comprehension – Understanding written sentences and paragraphs in work-related documents.

- Coordination – Adjusting actions in relation to others' actions.
- Mathematics – Using mathematics to solve problems.
- Systems Analysis – Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.

Minimum Qualification Requirements

Licensure as a professional engineer by the Iowa Engineering & Land Surveying Examining Board.

Effective date: 06/18 SA