

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

Transportation Engineer Associate

Definition

Performs progressively responsible, introductory engineering work to qualify to sit for a professional engineer examination; 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

Learns established technical engineering procedures, practices, standards, and methods relating to ongoing operations and develops professional work knowledge and abilities to perform duties independently.

Monitors and inspects construction projects to ensure compliance with plans, guidelines, and specifications; samples and tests materials and work for quality; verifies payments to contractor; plans project schedules, assesses project requirements for equipment, staffing, and technician training; and makes budget calculations.

Assists registered engineer with applied engineering research and design projects; provides technical direction and assistance in a transportation engineering or planning research program.

Determines alternatives to be studied in the corridor phase of a highway location project; considers relative engineering details and schedules field reviews; prepares preliminary concept plans and cost estimates for each alternative.

Develops preliminary bridge and culvert plans; performs hydrologic and hydraulic design and analysis of less complex highway structures; reviews preliminary and hydraulic designs from contractors to ensure compliance with state and federal guidelines and specifications.

Conducts geotechnical investigations, analyzes data, and makes recommendations for bridges, culverts, fill embankments, cuts, and other stability features; performs engineering analysis of pile driving systems and provides wave equation analysis and computer support for construction residencies.

Performs pavement condition testing and other materials testing updates and analyzes data obtained for use in the Iowa Pavement Management Information System.

Analyzes existing condition of state highway system and highway investment alternatives for major planning studies on topics including needs, sufficiency, and the highway investment plan.

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.

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- 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.

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.
- Reading Comprehension – Understanding written sentences and paragraphs in work-related documents.
- 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

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

- 1) Graduation from an accredited four-year college or university with a bachelor's degree in chemical, civil, construction, environmental, materials, mechanics, structural, or transportation engineering or in engineering management.
- 2) Possession of a verification of graduation with major course work in chemical, civil, construction, environmental, materials, mechanics, structural, or transportation engineering or in engineering management.

Notes

Applicants hired with verification of graduation will be required to graduate with a bachelor's degree from an accredited four-year college or university within 10 months of hire.

Within a period of time after hire, as determined by the appointing authority, employees in this class may be required to obtain one or more of the following certificates, licenses, or endorsements:

- Certification as an engineer intern by the Iowa Engineering & Land Surveying Examining Board
- Licensure as a professional engineer by the Iowa Engineering & Land Surveying Examining Board is required within 9 years for continued employment; temporary training assignments will terminate within six months following a second attempt to obtain a professional engineer license or nine years from date of hire.

Effective date: 06/18 SA