Class Code: 04323

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

Engineering Technician Senior

Definition

Performs advanced paraprofessional engineering work in support of maintenance engineering and operations, project development and construction, and/or planning in the preparation of roadway, bridge, trail, and other transportation plans. Monitors project progress to ensure compliance with federal and state guidelines by reviewing and approving project documentation and conducting a final official examination of accounts; 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

Provides contract administration for federal, primary, secondary, and institutional road construction projects; includes reviewing the contract for content and accuracy, documenting modifications, conducting final a review of the project records and maintaining a log and file of active projects.

Answers project-related questions from contractors, project engineers, project inspectors, local governments, and the public; recommends solutions to problems, performs technical field reviews to ensure compliance with contract and specifications, and performs final field inspections.

Verifies project data collected in the field for accuracy; determines if submitted data is appropriate for project concept; determines bid items and calculates quantities; estimates project costs to ensure proper funding allocations; selects appropriate road standards, specifications, construction detail sheets, traffic control plans, and general notations.

Attends or conducts pre-construction meetings and provides input to ensure proper policies, procedures, specifications, and Materials Office Instructions Memorandums are followed.

Performs general administrative assistance to include maintaining project plans, reviewing construction budget information, reviewing plans, responding to public concerns and complaints about impact of projects, and processing, recording, tracking, and distributing as-built plans.

Performs or coordinates traffic engineering studies, analyzes the results, and recommends action based on study and analysis.

Trains field personnel in the collection and submission of contract maintenance project data including proper interpretation of standards, specifications, and correct construction methods.

Conducts the Maintenance Quality Survey for 1,200 one-mile test sections on the state's primary and interstate highways; compiles results and prepares and distributes report.

Participates in the development of traffic control for movement of traffic through construction projects, reviews construction project traffic control plans, participates in incident management planning for complex construction projects, and assists with resolution of traffic-related problems on construction projects.

Develops documentation, budget figures, staffing needs and training plans, and goals and accomplishments for management objective reports and/or the maintenance work program; monitors accomplishments as related to targeted goals.

Administers project schedules, staffing requirements, vehicle/equipment/tool inventories, and related office activities, such as contract modifications, bi-weekly vouchers, and project audits within a residency; visits assigned projects to ensure adherence to specifications; and prepares and directs the preparation of periodic and special reports.

Works with engineer as lead technician overseeing the work of design staff in the development and review of highway improvement projects and development support activities; advises, instructs, and assists with the development of guidance used by Design Technician Specialists.

Develops and designs plan integration of innovative computer aided drafting (CADD) and design software tools. Leads efforts on design plan integration of cutting-edge software tools such as virtual reality, drone survey point clouds, and clash detection analysis. Develop high-end 3D visualization models and video for design staff, districts, and consultants.

Leads building information modeling (BIM) tools, including innovative field construction tools for contractors.

Develops training for others in the areas of design or computer applications. Leads training exercises that train the trainers (i.e., Design Technician Specialists that further train others).

Assists section engineering lead in maintaining continuity of operations, works with managers and staff in attaining performance objectives, engineering achievements, and effectiveness; serves on process improvement committees.

Manages the bureau development of automation processes and procedures; serves on committee for automation improvement and leads efforts in developing automation procedures, training, systems, and standards; coordinates the development work of design staff.

Performs cost estimates and crash analyses; evaluates existing roadways and project areas for safety issues.

Coordinates clearance, relocation, utility agreements, and right-of-way needs for projects.

Provides technical support of project development and engineering efforts for federal, primary, secondary, and institutional roads projects; develops preconstruction agreements and notifications, reviews project schedules, documents modifications, and supports project concepts and plan reviews.

Performs daily evaluation and response to employees, department, and public concerns related to construction projects and risks associated with construction activities; evaluates effectiveness of inspection activities and makes modifications or presents recommendations to superiors.

Administers the contract construction of capital improvement projects including building and allied facilities; conducts pre-construction meetings; recommends modifications in plans and specifications.

Designated positions perform duties related to snow and ice removal, which include: accessing the Roadway Weather Information System (RWIS), weather reports, and other related computers 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:

- Building and Construction – Materials, methods, and the tools involved in the construction or repair of houses, buildings, or other structures.
- Customer Service – Principles and processes for providing customer services, including customer needs assessment, meeting quality standards for services, and evaluating customer satisfaction.
- Design – Design techniques, tools, and principles involved in production of precision technical plans, blueprints, drawings, and models.
- Engineering and Technology – The practical application of engineering science and technology. Includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.
- Mathematics – Arithmetic, algebra, geometry, calculus, statistics, and their applications.
- Administration and Management – Business and management principles involved in strategic planning, resource allocation, human resources modeling, leadership technique, production methods, and coordination of people and resources.
- English Language – The structure and content of the English language, including the meaning and spelling of words, rules of composition, and grammar.
- Transportation – Principles and methods for moving people or goods by air, rail, sea, or road, including the relative costs and benefits.
- 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.
- Near Vision – See details at close range (within a few feet of the observer).
- Oral Comprehension – Listen to and understand information and ideas presented through spoken words and sentences.
- Written Comprehension – Read and understand information and ideas presented in writing.
- Written Expression – Communicate information and ideas in writing so others will understand.
- 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.
- Visualization – Imagine how something will look after it is moved around or when its parts are moved or rearranged.

Skills:

- 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.

- Critical Thinking – Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
- Reading Comprehension – Understanding written sentences and paragraphs in work related documents.
- Speaking – Talking to others to convey information effectively.
- Mathematics – Using mathematics to solve problems.
- Monitoring – Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.

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 college or university with an associate's degree in civil engineering or a related field, and experience equal to five years of full-time work in engineering survey, construction inspection, highway design, materials inspection, or materials testing.
2) A total of seven 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 civil engineering or a related field equals one year of full-time experience.
3) Current, continuous experience in the state executive branch that includes twelve months of full-time work as a Construction Technician Senior or Design Technician Specialist, or four years of full-time work as a Construction Technician, Highway Technician Senior, Engineering Operations Technician, or Design Technician.

Notes

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 Commercial Driver's License with the required endorsements and applicable restrictions must be obtained and subsequently maintained to continue employment.

If a CDL is not required, designated positions in this class 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, persons in designated positions are required to have a post offer, pre-employment physical verifying the physical ability to perform the duties described.

Travel, including overnight travel, may be required for positions in this class. Employees must arrange transportation to and from assigned work areas.

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

Effective date: 09/22 SA