

ENGINEER Competency Profile

Description of Work:

Engineers may be responsible for consultation, investigation, evaluation and planning, design, design review and approval, and/or determination of environmental and safety impacts of work processes and products (buildings, utilities, systems, sites, mapping, or infrastructures); provide project management oversight, which may include supervision of lower level staff; oversee or review environmental, infrastructure and geomatic projects; and manage implementation of projects/plans according to codes and regulations, which may include approval authority. Work assignments may involve unique factors and be lacking in precedence on which to base decisions and may be technically complex as evidenced by a high number of variables and inter-related considerations. Work is often performed independently requiring professional knowledge of complex and/or detailed technical procedures. Work may require considerable public contact to explain standards and regulations, or appearance before a regulatory/judicial body, provide consultation and technical assistance, and may require negotiation to determine the feasibility of project implementation or continuation. Work may require professional licensure or other certifications. Work performed includes exercising judgment and decision-making that directly impacts life, health, safety and/or the environment.

Contributing	Journey*	Advanced*
<p>This is engineering or geomatics work of a limited to moderate degree of complexity. Engineers may review/evaluate/prepare plans, specifications, calculations, and/or other engineering documents, provide recommendations to higher-level engineers for action; may analyze or design projects of limited complexity and scope; conduct inspections/audits/investigations, and provide consultation. Work at this level may require contact with private consultants, industry-specific owners and operators, local governmental officials and others for the purpose of explaining standards, gaining compliance to standards and providing technical assistance. Work is performed under the supervision of a higher-level engineer or manager.</p>	<p>This is engineering or geomatics work of a moderate to high degree of complexity. Engineers may be responsible for analysis, design, design review and approval, and/or determination of environmental and safety impacts of work processes and products. Provide project management oversight, which may include supervisory responsibilities; oversee environmental and infrastructure projects; manage implementation of projects/plans according to codes and regulations, which may include approval authority. More complex assignments are usually lacking in precedence on which to base decisions, and are more critical and technically complex. Work at this level is generally performed independently. Work may require considerable public contact to explain standards and regulations, provide consultation and technical assistance, and may require negotiation to determine the feasibility of project implementation or continuation.</p>	<p>This is engineering or geomatics work of a high degree of complexity, which may include supervisory responsibilities, or functioning as the technical expert in the area of assignment. Engineers at this level are accountable/responsible for independently planning and managing large and complex projects and/or programs; reviewing completed tasks and overall accomplishments for technical accuracy and adherence to previously established goals, including approval authority on complex actions. Assuring that standards for quality and quantity are met, reviewing work, budget and schedule oversight. Work requires considerable contact with other engineers, professionals, industry-specific owners and operators, local governmental officials and others. Represents the agency/university as an expert.</p>

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Competency	Definition
Professional Knowledge	Possession of a designated level of technical engineering skill or knowledge and the ability to keep up with current developments and trends in areas of expertise. May be acquired through academic, apprenticeship or on-the-job training or a combination of these. Possession of knowledge of statutes/codes/regulations, including program procedures, methods and practices and their application to specific situations, usually acquired on the job or in lower-level positions in the same or similar career path.
Program/Project Management	Ability to coordinate and administer programs, activities and protocols. Ability to manage resources, monitor activities and assess environmental risk, safety, and quality control associated with the program.
Engineering Review, Decision Making & Analysis	Knowledge of and ability to use effective approaches for choosing a course of action or developing appropriate solutions and/or reaching conclusions. Ability to make decisions and take action consistent with available facts, constraints, and anticipated consequences. Identify issues, obtain relevant information, relate and compare data from different sources, and identify alternate solutions.
Communication	Ability to communicate, in written and oral form, detailed and technical engineering information, guidelines and standards/statutes/codes/regulations to various audiences to ensure that they understand the information and the message, and to seek compliance. Ability to deliver presentations suited to the characteristics and needs of the audience such as negotiating solutions among different parties, or providing expert testimony.
Engineering Design and Analysis	Identifies, develops, and analyzes engineering designs and/or specifications; plans and modifies methods. Identifies and plans for resources. Approves engineering designs and/or program/project specifications of other engineers/design professionals to meet desired compliance with engineering principles, standards, statutes, codes, regulations and design. Monitor and ensure program/project meets specification and design. Negotiates design changes.
Leadership	Demonstrated skills and abilities needed to coordinate, facilitate, and participate in a collaborative approach to the completion of tasks or assignments.

Note: Not all competencies apply to every position/employee; evaluate only those that apply. Competency statements are progressive.

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Professional Knowledge: Possession of a designated level of technical engineering skill or knowledge and the ability to keep up with current developments and trends in areas of expertise. May be acquired through academic, apprenticeship or on-the-job training or a combination of these.

Possession of knowledge of program procedures, methods and practices and their application to specific situations, usually acquired on the job or in lower-level positions in the same or similar career path.

Contributing	Journey*	Advanced*
<p>1. Understands and applies the basic engineering concepts, practices, and theories involved in the design/development/review/permitting, construction, maintenance, operations, or repair of, projects/sites and their potential environmental and safety impacts.</p>	<p>1. Possesses and applies a thorough understanding of concepts, practices, and theories used in the engineering specialty area and demonstrates the ability to use it in practice. May have the general knowledge to oversee compliance regarding multiple specialties. Works independently with minimal day-to-day supervision.</p> <p>2. Applies working level understanding of the organizational and business objectives of section/specialty.</p>	<p>1. Possesses an expert level of understanding of engineering concepts, practices, and theories used in the engineering specialty area and demonstrates the ability to use it in practice.</p> <p>2. Thorough/demonstrated knowledge of internal organizational structure, business needs/objectives, budget, planning, legal/public relations considerations, and/or other related factors.</p>

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Program/Project Management: Ability to coordinate and administer programs/projects, activities and protocols. Ability to manage resources, monitor activities and assess environmental safety, risks and quality control associated with the program.

Contributing	Journey*	Advanced*
<p>1. Prepares/reviews small or less complex engineering/technical plans and/or data for completeness, compatibility, compliance with engineering principles, standards, codes and design needs; makes recommendations to higher level engineers or managers on project concerns/issues.</p> <p>2. Ensures sufficient coverage/resources for proposed program/project, under the guidance of a higher-level engineer or manager.</p> <p>3. Monitors, inspects, and/or manages small or less complex programs/ projects for completeness, compatibility, compliance with engineering principles and design needs and standards. May monitor budgets and/or schedules.</p>	<p>1. Evaluates and approves moderately complex program/project specifications for completeness, compatibility, compliance with engineering principles, standards, codes and design needs; performs inspections/audits to ensure that proper procedures are followed.</p> <p>2. Manages moderately complex programs/projects for completeness, compatibility, and compliance with engineering principles and design needs and standards. Identifies and resolves project/program changes. Develops, communicates and defends moderately complex programs/projects. Ensures program/project stays within budget and/or schedule.</p>	<p>1. Final approval for complex or a broad variety/scope of program/project specifications for completeness, compatibility, compliance with engineering principles, standards, codes, and design needs.</p> <p>2. Researches alternatives and designs or analyzes special details for non-standard items of work for programs/projects. Determines program/project priorities, processes and procedures.</p> <p>3. Manages complex or broad variety/scope of programs/projects for completeness, compatibility, compliance with engineering principles and design needs and standards; resolves/approves major project/program changes. Develops, communicates and defends complex or novel programs/projects. Approves program/project budget and/or schedule.</p>

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Engineering Review, Analysis, and Decision Making: Knowledge of and ability to use effective approaches for choosing a course of action or developing appropriate solutions and/or reaching conclusions. Ability to take action consistent with available facts, constraints, and anticipated consequences. Identifies issues, obtains relevant information, relates and compares data from different sources, and identifies alternate solutions

Contributing	Journey*	Advanced*
<p>1. Makes decisions on routine engineering matters or other areas requiring technical engineering knowledge. Decisions are subject to review.</p> <p>2. May make recommendations to approve routine engineering/technical designs and/or program/project specifications of other engineers to meet desired compliance with engineering principles, standards, codes, designs and statutes.</p>	<p>1. Makes recommendations and may make decisions on non-routine engineering and/or program matters or other areas requiring technical engineering expertise. May make final decisions. Provides technical analysis. May serve as a mentor/resource to lower level employees in the area of assignment.</p> <p>2. May approve moderately complex engineering/technical designs and/or program/project specifications of other engineers to meet desired compliance with engineering principles, standards, codes, designs and statutes. May address conflicting design constraints.</p>	<p>1. Independently makes final recommendations and may make decisions that require specialized engineering and/or program knowledge. Decisions may not be technically reviewed. Collaborates with others in finding solutions to controversial or sensitive matters that establish precedents. Technical expert in the area of assignment and may represent the agency/university as an expert.</p> <p>2. Approves complex or novel engineering/technical designs and/or program/project specifications of other engineers to meet desired compliance with engineering principles, standards, codes, designs and statutes. Addresses conflicting design constraints.</p>

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Communication: Ability to communicate, in written and oral form, detailed and technical engineering information, guidelines and standards to various audiences to ensure that they understand the information and the message, and to seek compliance. Ability to deliver presentations suited to the characteristics and needs of the audience such as negotiating solutions among different parties, or providing expert testimony.

Contributing	Journey*	Advanced*
<ol style="list-style-type: none"> 1. Expresses basic engineering concepts and related facts in a clear, concise and organized manner. 2. Writes clear, concise and organized documents and reports addressing basic engineering concepts and facts. 3. Presents detailed technical information, guidelines and standards to seek compliance and/or approval. 4. Assists in consultation, gathers information in response to an inquiry. 	<ol style="list-style-type: none"> 1. Expresses moderately complex engineering concepts and related facts in a clear, concise and organized manner. Modifies delivery, language or content to account for the characteristics and needs of the audience. 2. Writes clear, concise and organized documents and reports addressing moderately complex engineering concepts and facts. 3. Develops and negotiates positions in moderately complex engineering situations. May provide expert testimony. 4. Provides consultation to clients or others related to the specific program/project. Develops and/or creates informational products. 	<ol style="list-style-type: none"> 1. Explains novel or complex engineering concepts and related facts in a clear, concise and organized manner. Modifies delivery, language or content to account for the characteristics and needs of audience. 2. Writes clear, concise and organized documents, and reports addressing novel or complex engineering concepts and facts such as standards/practices/codes/regulations. Drafts/develops standards, rules, and legislation. 3. Develops and negotiates positions in complex or novel engineering situations. Provides expert testimony. 4. Provides consultation as an expert involving complex or broad/scope work project/program.

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Engineering Design and Analysis Identifies, develops, and analyzes engineering designs and/or specifications; plans and modifies methods. Identifies and plans for resources. Approves engineering designs and/or program/project specifications of other engineers to meet desired compliance with engineering principles, standards, statutes, codes, regulations and design. Monitor and ensure program/project meets specification and design. Negotiates design changes.

Contributing	Journey*	Advanced*
<p>1. Applies mathematical, physical, and engineering sciences to routine services or creative work as consultation, investigation, evaluation, planning, and design of engineering/geomatic projects. Plans methods and resources.</p>	<p>1. Applies mathematical, physical, and engineering sciences to moderately complex services or creative work as consultation, investigation, evaluation, planning, and design of engineering/geomatic projects. Plans methods and resources.</p> <p>2. May approve design changes</p> <p>3. Researches, collects, and/or analyzes information/data which contributes to making engineering decisions.</p> <p>4. Monitors and ensures projects meet specifications and/or design standards.</p>	<p>1. Applies mathematical, physical, and engineering sciences to the most complex services or creative work as consultation, investigation, evaluation, planning, and design of engineering/geomatic projects. Plans methods and resources.</p> <p>2 Approves design changes.</p> <p>3. Researches, collects, and/or analyzes information/data which contributes to making engineering decisions.</p> <p>4. Monitors and ensures projects meet specifications and/or design standards.</p>

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Leadership: Demonstrated skills and abilities needed to coordinate, facilitate, and participate in a collaborative approach to the completion of tasks or assignments. May include supervision of others.

Contributing	Journey*	Advanced*
<p>1. Serves as a member on a program/project team and helps develop project solutions. May serve as a team leader. Promotes program goals and objectives.</p>	<p>1. Develops and manages program/project plan. Provides consultation on issues and requests from clients. Consults with higher-level professionals to discuss alternative solutions. May supervise staff.</p> <p>2. Develops and implements short-term strategies consistent with agency/university goals.</p>	<p>1. Provides program/project leadership in planning and organizing the work of others. Works collaboratively to manage issues. Evaluates and recommends resource needs. Consults with senior level decision-makers on an on-going basis. May supervise staff.</p> <p>2. Participates in the development of long-range strategic goals. Builds client support of work group objectives.</p>

Minimum Training and Experience:

Graduation from a four-year college or university with a degree in engineering relevant to the area of assignment; or equivalent combination of education and experience

Additional Requirements: Some positions may require licensure by the North Carolina Board of Examiners for Engineers and Surveyors.

Note: This is a generalized representation of positions in this class and is not intended to identify essential work functions per ADA. Examples of competencies are primarily those of the majority of positions in this class, but may not be applicable to all positions.