Mechanical Engineer, GS-0830-5

Standard Position Description Number: REN0700

Introduction

This position is located in an operating office (Office) within the Bureau of Reclamation (Reclamation) within the Department of the Interior (Department). This position serves as a developmental engineer carrying out developmental mechanical engineering assignments throughout the Office, which typically include a variety of geographic locations. Mechanical engineering assignments may specialize in one or more specialties: Design, Construction Management, and Operations and Maintenance (O&M). Complex features/facilities include hydroelectric generating powerplants; pumping plants; buildings; and multipurpose water conveyance, and storage systems such as dams, canals, pipelines, tunnels, desalination, and related appurtenant systems. Mechanical systems include piping systems, heating ventilation and air conditioning (HVAC), fire protection, water treatment process systems, large gates, fish handling equipment, cranes, hoists, elevators, turbines, and pumps.

This SPD must be used in conjunction with the other BOR Mechanical Engineer SPDs for developmental purposes and may not be used as a stand-alone or FPL GS-5.

Major Duties

Performs these major duties in a developmental capacity and on a regular and recurring basis with Engineering Analysis being performed a minimum of 25% of the work time.

Engineering Analysis (minimum 25% of work time)

Performs trainee level engineering analyses associated with segments of engineering assignments to include technical planning activities; data collection; modeling and data analyses; analyses of site location and/or conditions; troubleshooting mechanical equipment and systems; and risk estimation and analyses. Analysis assignments may involve trainee level assignments in one or more specialty areas of mechanical engineering. Assignments may involve completing engineering designs in a developmental capacity.

Documentation and Presentation

Carries out, interprets, and explains basic computations and calculations. Reads, understands, manipulates, analyzes, interprets, and conveys findings.

Investigations, Assessments, and/or Inspections

Participates in and/or performs developmental tasks associated with facility examinations, reviews, and/or inspections.

Other Duties (non-grade controlling/non-series controlling work)

Performs developmental assignments and tasks associated with any of the following: project management; administration of contracts and agreements; and database operation.

Performs other related duties as assigned.

Factors

Factor 1. Knowledge Required by the Position (Level 1-5 750 pts)

Professional knowledge of, and skill in applying, basic mechanical engineering theories, concepts, principles, and methodology for practicing engineering in order to accomplish developmental engineering assignments using basic

techniques, procedures, and methods; carry out, interpret, and explain basic computations and calculations; and convey findings.

Familiarity with the fundamental principles and concepts of mechanical equipment and systems.

Ability to perform and interpret calculations, analyses, and computations involving well-understood mechanisms.

Knowledge of automated engineering systems and applications and ability to use computers, software applications, and databases, and automated systems to accomplish developmental engineering assignments.

Ability to effectively convey information to individuals or groups, taking into account the nature of the information (e.g., technical). Skill in writing in a clear, concise, and organized manner.

Ability to apply qualitative and quantitative analytical techniques and common project management principles, methods, tools, and techniques.

Factor 2. Supervisory Controls (Level 2-1 25 pts)

The supervisor or higher graded engineer provides developmental assignments with detailed instructions, deadlines, and priorities. The incumbent is expected to perform the work as instructed and consult with supervisor or higher graded employee when clarification of instructions or additional guidance is necessary. Work is reviewed closely and is checked in progress so as to evaluate accuracy and developmental rate of progress. As the incumbent progresses professionally and becomes more competent in certain work areas, supervisory control over work in progress relaxes gradually. However, the supervisor will continue to carefully review and evaluate work results for technical accuracy.

Factor 3. Guidelines (Level 3-2 125 pts)

Guidelines for the engineering assignments are directly applicable and there are clear precedents. The incumbent refers any situation where the guidelines cannot be applied or require significant deviation to the supervisor or higher graded employee for interpretation and additional guidance. The incumbent uses judgement to select and apply the most appropriate guidance and references and decides on the appropriateness of minor deviations within the guidelines.

Factor 4. Complexity (Level 4-2 75 pts)

As a developmental engineer, the work involves performing related tasks which provide experience in the methods, practices, and procedures of the engineering field. The incumbent decides what needs to be done by recognizing differences among a few easily distinguishable situations and then choosing a course of action from various standard steps, processes, methods, and procedures. The incumbent recognizes the differences among a few easily distinguishable situations.

Factor 5. Scope and Effect (Level 5-1 25 pts)

This position serves as a developmental engineer carrying out developmental assignments meant to provide experience that advances and enhances the incumbent's knowledge, skills, and abilities in engineering. The work results facilitate the work of others but have little impact beyond the immediate work unit.

Factors 6. & 7. Personal Contacts and Purpose of Contacts (Level 6-1 and 7A 30 pts)

Personal contacts include counterparts and employees within the immediate Office and possibly other offices throughout the Bureau. Contacts are for the purpose of obtaining, clarifying, and exchanging information and data as part of engineering activities.

Factors 8. Physical Demands (Level 8-1 5 pts or Level 8-2 20 pts)

- (Level 8-1) The work is typically performed in an office setting with no special physical demands. However, work may also be performed in the field which involves periods of moving about worksites, bending, climbing, or driving motor vehicles to worksites.
- (Level 8-2) The work regularly combines both office and field assignments. Field work requires physical exertion, such as long periods of standing, or recurring and considerable walking, stooping, bending, crouching, crawling, and climbing such as in regular and periodic construction activities and field inspections. Work may also include frequent lifting of moderately heavy items weighing less than 50 pounds. Field assignments may involve driving motor vehicles to work sites in remote locations requiring overnight stays.

Factor 9. Work Environment (Level 9-1 5 pts or Level 9-2 20 pts)

- (Level 9-1) The work is usually performed in an office setting. However, work time may also be spent periodically visiting field sites. Field site visits are typically performed in either an outdoor setting subject to weather changes, diverse terrain, and safety hazards associated with working around complex features and/or construction, or an industrial setting subject to noise, fumes, and moving machinery. Both settings may require the use of personal protective equipment. The work may also involve some overnight travel for training, meetings, and site visits. Safety precautions and protocols are observed at all times, and the incumbent complies with safety instructions and regulations and ensures individual and others' safety by promptly reporting unsafe acts, unsafe conditions, and accidents to the supervisor.
- (Level 9-2) The work involves regular and recurring exposure to moderate risks, discomforts, and unpleasantness such as: high noise levels, infectious materials, or toxic or irritating chemicals; travel in safety approved small aircraft and watercraft; high winds and low or high temperatures; infestation of dangerous reptiles or poisonous plants, snakes, or insects; adverse weather conditions; noxious fumes; flammable liquids; or radiation. The work involves performing tasks in close proximity to rotating heavy mechanical and electrical machinery and may involve working within confined spaces for extensive periods of time. Special safety precautions such as protective clothing and gear are necessary. Safety precautions and protocols are observed at all times, and the incumbent complies with safety instructions and regulations and ensures individual and others' safety by promptly reporting unsafe acts, unsafe conditions, and accidents to the supervisor.

Total Points and Grade Conversion

Total Points = 1040 (low) 1070 (high)
Point Range = 855-1100

Grade = GS-5

Other Significant Facts

Functional Classification (FC): Completed by servicing human resources office and annotated on PD Cover Page.