

POSITION DESCRIPTION						
1. Position Number			2. Explanation (show any positions replaced)			
3. Reason for Submission <input type="checkbox"/> New <input type="checkbox"/> Redescription <input type="checkbox"/> Reestablishment <input type="checkbox"/> Standardized PD <input type="checkbox"/> Other						
4. Service <input type="checkbox"/> HQ <input type="checkbox"/> Field	5. Subject to Identical Addition (IA) Action <input type="checkbox"/> Yes (multiple use) <input type="checkbox"/> No (single incumbent)					
6. Position Specifications Subject to Random Drug Testing <input type="checkbox"/> Yes <input type="checkbox"/> No Subject to Medical Standards/Surveillance <input type="checkbox"/> Yes <input type="checkbox"/> No Telework Suitable <input type="checkbox"/> Yes <input type="checkbox"/> No Fire Position <input type="checkbox"/> Yes <input type="checkbox"/> No Law Enforcement Position <input type="checkbox"/> Yes <input type="checkbox"/> No			7. Financial Statement Required <input type="checkbox"/> Executive Personnel-OGE-278 <input type="checkbox"/> Employment and Financial Interest-OGE-450 <input type="checkbox"/> None required		10. Position Sensitivity and Risk Designation <u>Non-Sensitive</u> <input type="checkbox"/> Non-Sensitive: Low-Risk <u>Public Trust</u> <input type="checkbox"/> Non-Sensitive: Moderate-Risk <input type="checkbox"/> Non-Sensitive: High-Risk <u>National Security</u> <input type="checkbox"/> Noncritical-Sensitive: Moderate-Risk <input type="checkbox"/> Noncritical-Sensitive: High-Risk <input type="checkbox"/> Critical-Sensitive: High-Risk <input type="checkbox"/> Special Sensitive: High-Risk	
		8. Miscellaneous Functional Code: -- BUS: --	9. Full Performance Level Pay Plan: Grade:			
11. Position is <input type="checkbox"/> 2-Supervisory <input type="checkbox"/> 4-Supervisor (CSRA) <input type="checkbox"/> 5-Management Official <input type="checkbox"/> 6-Leader: Type I <input type="checkbox"/> 7-Leader: Type II <input type="checkbox"/> 8-Non-Supervisory		12. Position Status <input type="checkbox"/> Competitive <input type="checkbox"/> SES <input type="checkbox"/> Excepted (specify in remarks) <input type="checkbox"/> SL/ST			15. Fair Labor Standards Act <input type="checkbox"/> Exempt <input type="checkbox"/> Nonexempt	
	13. Duty Station	14. Employing Office Location	16. Cybersecurity Code #1:                      #2: --                      #3: --	17. Competitive Area Code: Competitive Level Code:		
18. Classified/Graded by	Official Title of Position		Pay Plan	Occupational Code	Grade	Initial      Date
a. Department, Bureau, or Office						
b. Second Level Review			--		--	
19. Organizational Title of Position (if different from, or in addition to, official title)			20. Name of Employee (if vacant, specify)			
21. Department, Agency, or Establishment U.S. Department of the Interior			c. Third Subdivision			
a. Bureau/First Subdivision			d. Fourth Subdivision			
b. Second Subdivision			e. Fifth Subdivision			
22. Supervisory Certification. I certify that this is an accurate statement of the major duties and responsibilities of this position and its organizational relationships and that the position is necessary to carry out Government functions for which I am responsible. This certification is made with the knowledge that this information is to be used for statutory purposes relating to, but not limited to: FLSA determinations; position sensitivity and requirements; and appointment/payment of public funds. False or misleading statements may constitute violations of such statutes or their implementing regulations.						
a. Typed Name and Title of Immediate Supervisor			b. Typed Name and Title of Higher-Level Supervisor or Manager (optional)			
Signature		Date	Signature		Date	
23. Classification/Job Grading Certification. I certify that this position has been classified/graded as required by Title 5, U.S. Code, in conformance with standards published by the U.S. Office of Personnel Management or, if no published standards apply directly, consistently with the most applicable published standards.			24. Position Classification Standards Used in Classifying/Grading Position			
Typed Name and Title of Official Taking Action						
Signature		Date				
25. Position Review	Initials	Date	Initials	Date		
a. Supervisor						
b. Classifier						
26. Remarks						

**DOI Standard PD**  
**PD# DI00100**

**Classification: Civil Engineer, GS-0810-12**

**INTRODUCTION**

This position is located in an operating office (Office) within a bureau or bureau equivalent office (Bureau) within the Department of the Interior (Department). This position serves as an experienced engineer providing civil engineering mentorship and expertise for a variety of complex projects and activities throughout the Office which typically include a variety of geographic locations, complex features, and unusual needs or special demands. Work may include design, studies, analyses, construction administration, documentation, inspections, assessments, investigations, reviews, cost estimating, specifications writing, compliance evaluations, and evaluating facility capacities and operations. The purpose of this position will include one or more specialties in hydraulic, hydrologic, geotechnical, structural, highway, and construction management. Complex features include bridges, oil and gas producing facilities, concrete and embankment dams, roads, levees, canals, pipelines, tunnels, pumping plants, power plants, waterways, reservoirs, water and wastewater systems, buildings, irrigation systems, recreation sites, and related appurtenant systems.

**MAJOR DUTIES**

Performs the first major duty (Engineering Analysis) a minimum of 25% of the work time.

**Engineering Analysis:** Performs engineering analyses to include performing and coordinating technical planning activities; data collection (including validation and management); modeling and data analyses; analyses of site location and/or conditions; risk estimation and analyses; or analyses of instrumentation data. Evaluates engineering aspects of state and federal regulatory and permitting programs, conducting bond adequacy reviews, oversight reviews, and reviews on federal lands and in states with resource extraction programs under direct federal jurisdiction. Makes engineering recommendations and/or decisions based on engineering analysis. Specialty area analyses can include:

- **Construction Management:** Work primarily involves the performance and/or oversight of on-site construction work, including inspection and acceptance of facility or utility construction work performed by a contractor. Duties may include serving as a Contracting Officer's Representative (COR), reviewing designs for constructability, drafting specifications, determining and evaluating construction sequencing, researching and preparing appropriate levels of cost estimates, and reviewing and evaluating third party cost estimates through all phases of the planning and final design process.
- **Geotechnical:** Work primarily involves: analysis for seepage, static, and dynamic stability for issue evaluations, design, construction, operation, and rehabilitation for embankment dams, concrete structures, and underground structures; stability and deformation of dynamic loadings from wave action, earthquake ground motions, grouting analysis of structure foundations, dewatering, foundation bearing capacity,

- and stability analysis for soil, rock, manmade, and natural slopes; determining modeling boundary conditions and adapting methods to solve problems where analytical solutions are inadequate; determining adequacy of sampling and testing for field investigations and changes needed based on field conditions; determining soil and rock engineering properties based on field and laboratory testing; making foundation treatment and improvement recommendations.
- **Highway:** Work primarily involves the planning, design, construction, and maintenance of highways, road structures, and highway systems, including transportation facilities, considering factors such as economics, route location, traffic behavior, and vehicle characteristics.
  - **Hydraulics:** Work primarily involves the application of hydraulics and principles of fluid mechanics, including application of engineering concepts and practices in hydraulics and sediment transport, erosion, and deposition. Hydraulic engineering work also includes analysis of waterway response to management actions and environmental disturbances such as climate change, floods, fires, landslides, and earthquakes.
  - **Hydrologic:** Work primarily involves applying the science of hydrology including: analyzing and calculating flow characteristics; designing drainage structures (e.g., bridges and canals); and evaluating facility or waterway capacities and operations (e.g., reservoirs, canals, pipelines, pumping plants). Plans, performs, coordinates and directs comprehensive hydrologic civil engineering studies of regulated and unregulated river systems and infrastructure in accordance with applicable authorizations, policy, and regulatory requirements. Develops, utilizes, and maintains various models to conduct and simulate engineering analysis.
  - **Structural:** Work primarily involves the application of applied mechanics, including the distribution of loads, stresses resulting from static and dynamic loads, and strength of materials and structural dynamics.

**Design:** Completes and/or reviews engineering designs to include: 1) planning and conducting engineering studies or evaluations such as preliminary, appraisal, feasibility, final design, and value planning/value engineering; 2) creating, performing, reviewing, checking, and/or modeling engineering designs; 3) developing design criteria, procedures, and instructions; 4) providing technical approval as the engineer in responsible charge of design activities and engineering decisions; 5) contributing to the design and modifications of new and existing complex features to mitigate static, dynamic, and hydrologic/hydraulic loadings; or 6) design, installation, and maintenance of instrumentation systems to provide engineering data for analysis and/or operational decision support.

**Documentation and Presentation:** Develops project guidelines, protocols, and procedures that are specific to the project; and may review for comment or propose draft Bureau directives, standards, and policies. Prepares, or oversees the preparation of, and reviews technical documentation such as technical memorandums and reports, engineering study analyses and results, correspondence, publications, design criteria, calculations, design summaries, design standards, designer's operating criteria, operating procedures, evaluation and oversight reports, value studies reports, inspection and assessment reviews, impact assessments, permit applications, emergency action plans and exercises, construction plans and reports, quantity

estimate worksheets, specifications, constructability reviews, solicitation packages, required planning, final design, and procurement construction cost estimates such as Independent Government Cost Estimates (IGCE) and contract correspondence including responses to submittals and Request for Information (RFI). Makes oral presentations of technical documentation at coordination meetings, design briefings, or other technical briefings, in some cases in support of enforcement activities as part of Federal oversight of regulatory programs.

**Investigations, Assessments, and/or Inspections:** Plans, schedules, coordinates, and conducts civil engineering facility examinations, reviews, and/or inspections which include conducting condition assessments and construction and transfer inspections; identifying deficiencies relative to design criteria, applicable codes and standards, or state or federal statutes or regulations; calculating preliminary estimates for repairs; coordinating with internal and external partners; documenting and presenting results; identifying future needs for the asset investment such as extraordinary maintenance and rehabilitation; and project management planning. Assignments may include conducting and/or peer reviewing Periodic Facility Review or Comprehensive Review Reports; or serving as senior engineer on Comprehensive Reviews for high and significant-hazard dam examinations in accordance with Bureau and Department policies, directives, and standards. Assignments may also include hydrologic analyses and investigations such as flow studies and statistical hydraulic studies.

**Reviewing and Mentoring:** Provides technical reviews, peer reviews, and checking of designs, drawings, engineering analysis, and technical documents, specifications, and contract correspondence, ensuring documents are accurate and quality assurance processes were followed. Provides technical mentorship, guidance, training, and advice to engineers and technicians and other internal and external stakeholders. May sign documents for technical approval in accordance with Bureau and Department policies, directives, and standards.

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

**Project Management:** Develops, monitors, and manages project plans that outline the scope, schedule, and budget of assigned projects. This includes: coordinating and communicating with other groups and offices throughout the organization such as program and project managers, engineering, finance, maintenance, permit compliance, and acquisition; managing changes to the project plans with external stakeholders, tribes, and regulatory authorities; identifying and addressing issues prior to adverse impacts to the schedule and budget; and participating on and/or leading technical teams.

**Contracting Officer's Representative (COR)/Grants Officer's Technical Representative (GOTR)/Awarding Official Technical Representative (AOTR):** Works with Contracting Officer/Grants Officer/Awarding Official to implement and administer a variety of assigned contracts, including construction contracts, service or supply contracts, P.L. 93-638 Indian Self Determination and Education Assistance Act as amended contracts/agreements, interagency agreements, and financial assistance agreements. Initiates timely actions and technically monitors the contract/agreement to ensure that they are carried out to completion as outlined in the contract/agreement. Researches the background on problems, identifies and devises courses of action in coordination with the Contracting Officer, Grants Officer, or Awarding Official as appropriate, and prepares recommendations for decision by management.

**Compliance:** Provides engineering support in connection with regulatory program oversight, policy and rulemaking efforts, review of regulatory compliance issues, and resolution of engineering related issues as they are encountered. This may include review of lands unsuitable for mining petitions.

**Database Operation:** Develops, modifies, and utilizes relational databases to maintain engineering data for conducting operational and planning analyses. Oversees development and operation of engineering data collection systems directly and/or in coordination with other government agencies and non-federal sources. Ensures necessary data is collected, transmitted, downloaded, decoded, and received for its intended purpose.

**Technical Working Groups:** Participates on and/or leads technical work groups or teams. May provide technical organizational representation and collaboration on teams external to the organization, including external stakeholders and partners.

Performs other duties as assigned.

## **FACTORS**

### **Factor 1. Knowledge Required by the Position**

**Level 1-7 1250 pts**

Broad professional knowledge of, and skill in applying, a wide range of engineering theories, concepts, principles, standards, and methods sufficient to provide advisory services in engineering analyses, documentation, and investigations, and in the planning and/or design process; and to provide engineering design, analyses, review, inspection, and/or documentation for a wide range of civil engineering assignments involving combinations of complex features which require adaptation of precedents and existing strategies to meet the unusual or special demands of the specific assignment.

General knowledge with the principles and practical concepts and processes of other related engineering and physical and biological/environmental science disciplines in order to ensure connection, contribution, or inclusion of the multiple disciplines involved in civil engineering assignments.

Skill in identifying, conceptualizing, and developing solutions to engineering problems or needs, and skill in independently planning and conducting studies and reviews and developing technical documents such as site reviews, feasibility through final designs, and associated guidance criteria, procedures, and instructions. Ability to develop new insights into situations and knowledge of new and emerging engineering methods and technology to apply when addressing engineering problems and needs.

Knowledge of engineering data collection methods. Knowledge of and skill in evaluating data sources within the Bureau and industry. Skill in identifying and assessing the data needed for design development and engineering assignments, including site assessments.

Knowledge of automated engineering systems and applications in order to effectively and efficiently plan, gather the appropriate data for input into the system, and assess, interpret, and analyze the validity of the generated results. Skill in using computers, software applications,

databases, and automated systems to accomplish engineering assignments which may include programming, scripting, and/or coding

Skill in effectively conveying information to individuals or groups, taking into account the nature of the information (e.g., technical, sensitive). Skill in writing in a clear, concise, organized, and convincing manner for the intended audience.

Skill in establishing collaborative working relationships with stakeholders to ensure that their needs are heard and addressed; identifying and analyzing problems; distinguishing between relevant and irrelevant information to make logical decisions and develop solutions and communicating effectively with all levels and types of organizations and audiences. Skill in using partnerships to achieve collaborative solutions and resolve complex problems; utilizing project management, conflict management, and/or team building, tools to achieve results in a collaborative spirit; and analyzing diverse viewpoints to make planning decisions and solve work problems.

Knowledge of Bureau and Office mission, structure, projects, and facilities. Knowledge of project benefits, authorities, stakeholders, and their governing laws, statutes, regulations, compacts, and treaties. Knowledge of asset criticality and risk assessment methodology and processes.

Knowledge of and skill in applying qualitative and quantitative analytical techniques and project management principles, methods, tools, and techniques in order to develop, schedule, coordinate, monitor, and manage projects and resources. Project management certification may be required for specific assignments.

Knowledge of administrative activities associated with administration of contracting and agreement actions, procedures, and options, and working knowledge of the associated documents and contract and agreement actions in order to assist the Contracting Officer/Grants Officer/Awarding Official in performing contract administration functions. Knowledge of and skill in applying federal Acquisition Regulation (FAR) requirements and Construction Specifications Institute (CSI) guidelines for drafting contract documents. COR, GOTR, or AOTR responsibilities may require specific training and/or certification.

## **Factor 2. Supervisory Controls**

**Level 2-4 450 pts**

The supervisor outlines overall objectives and available resources and the incumbent and supervisor, in consultation, discuss scope of the assignment, methods, and time frames. The incumbent plans and carries out projects and assignments and resolves most conflicts independently and coordinates and collaborates with stakeholders to accomplish the work. The incumbent interprets policy and regulatory requirements in terms of established objectives and keeps the supervisor informed of progress and potentially controversial problems, concerns, issues, or other matters. Throughout the project or activity, the incumbent develops changes to plans and/or methodology and provides recommendations for improvements in order to meet program/project objectives. The supervisor reviews completed work for soundness and quality of overall approach, effectiveness in meeting requirements or producing expected results, the feasibility of recommendations, and adherence to requirements.

**Factor 3. Guidelines****Level 3-4 450 pts**

Guidelines include applicable Bureau and Department instructions, policies, and procedures; national and state codes, standards, and regulations on engineering matters; manufacturers' literature; precedents for similar situations; applicable federal, state, and tribal resource laws and regulations; and applicable construction management regulations/guidelines such as the FAR, applicable Code of Federal Regulations (CFR), and CSI. Such guidelines are often inadequate in dealing with individual assignments in that they seldom provide concrete solutions to specific engineering problems. The incumbent uses experienced judgement, initiative, and resourcefulness in applying and adapting civil engineering practices or departing from established practices and precedents as required to solve problems for which precedents are not directly applicable due to such factors as unusual local conditions (e.g., climatic, geographic, environmental) or the specialized requirements of the particular facility or structure. Due to the complexity and scope of engineering projects and assignments, the incumbent must develop project guidelines, protocols, and procedures that are specific to the project and may review for comment or propose draft directives, standards, and policies.

**Factor 4. Complexity****Level 4-4 225 pts**

Engineering projects and activities involve the following complicating factors: design data is not readily available or there is a large amount of data to work through when determining the most relevant data to work with for the specific project; the need to develop representative and accurate cost estimates when civil engineering data and scope may not be well defined or mature; diversity of the design and review activities with the nature of the engineering assignment can vary significantly; integrating many systems into one project; high profile projects and projects that involve operational losses; balancing creativity and engineering judgment to best address the needs of the activity and stakeholders; the need to stay informed regarding the latest technology and/or methodologies and how it can be incorporated into specific engineering solutions; aging infrastructure and dealing with existing footprints often require unique and well formulated engineering solutions and designs that incorporate existing conditions; incorporating accessibility, cultural resource or environmental considerations; addressing unanticipated problems due to unusual local conditions and combinations of unusual features; managing changes to the project scope, budget, and schedules. Use application of sound engineering judgment and principles while addressing these complexities without compromising the engineering integrity of existing features and associated systems. Must recognize the complex relationships of the systems involved and exercise judgment, resourcefulness, and originality to ensure the design or engineering solutions and recommendations can be integrated into the existing systems. Some assignments may involve interpretation of engineering aspects of federal and state laws, regulations, or policy for engineering support in compliance assignments. Additional complexities include collaborating with multiple stakeholders with competing interests, goals, and objectives; coordinating projects for/with federal, state, tribal governments, and/or local entities with overlapping roles and authorities; and balancing complex multi-purpose approaches necessitating significant stakeholder involvement and modification and refinement of existing applications, processes, precedents, and techniques.

**Factor 5. Scope and Effect****Level 5-4 225 pts**

This position serves as an experienced engineer providing civil engineering mentorship and expertise for a variety of complex projects and activities throughout the Office or Bureau which typically include a variety of geographic locations, complex features, and unusual needs or special demands. Responsibilities includes design, studies, analyses, documentation, inspections, assessments, investigations, reviews, cost estimating, specifications writing, compliance evaluations, and evaluating facility capacities and operations. Assignments also include assessing project and program effectiveness; investigating, evaluating, advising on, and resolving unusual problems, issues, and conditions; developing criteria, procedures, or instructions. Civil engineering projects and activities have significant effect upon the operations of Bureau projects, as well as the Bureau's and/or Department's ability to meet its program goals. Civil engineering assignments impact life, health, and property of the Bureau, tribal governments, or the general public and the efficiency, feasibility, integrity, accuracy, adequacy, and safety of a wide range of Bureau and/or Department activities, or the activities of organizations within a regional or equivalent geographic area.

**Factors 6 & 7. Personal Contacts and Purpose of Contacts****Level 6-3 and 7C 180 pts**

Personal contacts include counterparts and employees within the immediate Office and other offices throughout the Bureau, as well as other federal agencies. Contacts also include representatives from other local, state, tribal governments, water districts and commissions and from industry such as architecture and engineering firms, mine operators, manufacturers' representatives, and contractors. Contacts may also include peers from colleges and universities and professional organizations, as well as public stakeholders. Contacts are for the purpose of obtaining, clarifying, and exchanging information and data as part of engineering activities, as well as exchanging professional expertise and experience; planning, coordinating, and advising on work efforts; and leading, guiding, and/or participating on teams. Requires collaboration skill and skill in dealing with individuals with differing views.

**Factor 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 walking, bending, climbing, or driving motor vehicles to worksites. The work may also involve some overnight travel for training, meetings, and site visits.

(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 also involve driving motor vehicles to work sites, some of which may be remote, and include overnight stays in remote locations.

**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. 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 water craft; 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 = 2790 (low) 2820 (high)

Point Range = 2755-3150

Grade = GS-12

**OTHER SIGNIFICANT FACTS**

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

Registration: Registration as a Professional Engineer may be required as articulated by specific Bureau policy or practices.

Certification: Certification to serve as a Federal Acquisition Certification (FAC) COR or AOTR may be required as articulated in Department and/or Bureau policies. Federal Acquisition Certification for Program and Project Manager (FAC-P/PM) may be required as articulated in Department and/or Bureau policies.