STATE OF MONTANA
JOB DESCRIPTION

Montana state government is an equal opportunity employer. The State shall, upon request, provide reasonable accommodations to otherwise qualified individuals with disabilities.

Job Title: Geotechnical Engineering Specialist -PE / PG Position Number: 46017, 40055

Location: Helena Department: Transportation

Division and Bureau: Highways and Engineering Division/Geotechnical and Pavement Bureau

Section and Unit: Geotechnical Section

Job Overview: This position conducts professional geotechnical engineering analysis and design. The incumbent evaluates project plans; establishes guidelines, procedures, and parameters for various projects and activities; plans and oversees a variety of investigation, sampling, and engineering projects; provides advanced technical assistance to a variety of individuals and agencies involved with ongoing construction and maintenance projects; and performs a variety of other duties in support of the Department goals and Division objectives. This position assists District construction personnel with geotechnical aspects of construction projects and responds to emergency events (landslides, rockfalls, etc.) that may occur in the District. The incumbent reports directly to the Geotechnical Operations Manager and indirectly to the Geotechnical Engineer.

Essential Functions (Major Duties or Responsibilities):

Geotechnical Engineering Analysis and Design - 55%
This position provides advanced professional engineering analysis and final design service for geotechnical aspects of Department Road and bridge construction projects. The geotechnical engineering specialist evaluates overall project purpose and requirements to determine geotechnical issues and impacts; establishes analytical procedures and conducts engineering analyses; designs alternatives and approached to complex geotechnical problems; organizes and writes comprehensive reports to present findings and recommendations; designs field exploration plans and directs subsurface investigations; and attends and conducts reviews and meetings s to discuss, coordinate, and develop solutions to geotechnical problems.

- Serves as a department expert in one or more specialized geotechnical engineering applications and is responsible for addressing complex professional issues associated with geotechnical engineering
- The geotechnical engineering specialist is expected to show initiative in researching and proposing new methods and practices for statewide adoption, developing innovative approaches to design problems, and incorporating new standards and technologies into Department operations.
- Perform final designs for landslide repair, rock fall repair, and retaining walls.

- Perform final geotechnical engineering including, earthquake analysis, for bridge and wall foundation elements.
- Evaluates overall project purpose and requirements to determine specific geotechnical issues requiring analysis.
- Establishes analytical procedures and conducts detailed engineering of geotechnical components of specific projects.
- Organizes and writes comprehensive geotechnical reports to present results of field and laboratory studies, analytical procedures, and technically defensible recommendations for geotechnical design parameters.
- Writes special provisions for geotechnical aspects of construction such as pile driving, drilled shafts, retaining walls, slide repairs, MSE walls, etc.
- Designs field exploration plans.
- Directs detailed engineering subsurface investigations to collect and analyze the various soils and rock samples
- Provides expert advice on geotechnical engineering issues during attendance at meetings for specific project elements and special design considerations by contractors, departmental personnel, and other state and local agency personnel as necessary.

Project Planning, Oversight, and Construction Assistance - 25%

- Plans and prioritizes projects to ensure the most efficient, cost-effective, and otherwise appropriate use of human and material resources within inflexible EPS timelines and parameters.
- Establishes guidelines and parameters for site-specific geotechnical studies to establish sample collection types, techniques and locations; analytical methods; human and material resource requirements; and other parameters.
- Conducts technical review of Construction plans to verify appropriate interpretation of geotechnical recommendations and requirements through both office and field reviews.
- Provides advice to Construction when problems arise in the field and visits sites as necessary.
- Designs and administers a Laboratory testing Program based on field investigations, analytical results, and scientific observations to manage and monitor testing assignments for soil and rock samples recovered from field investigations.
- Provides geotechnical assistance to Emergency Relief Projects involving rockslides, landslides, and related road hazard emergency situations.
- Provides on-site and remote geotechnical engineering advice to others.

Consultant Overview - 15%

Coordinates with consultants, reviews analytical results, methodologies, and recommendations from consultants to verify the scientific and logical integrity of procedures, results, and conclusions.

- The review includes review and analyses of the consultant Geotechnical engineering alignment and structures reports.
- Performs final geotechnical review of consultant work for submittal of a compete PS&E package in accordance with MDT requirements.

Other Duties - 5%
This position performs a variety of other geotechnical engineering, research, and design duties as assigned in support of the MDT mission and Bureau goals.

Supervision: The number of employees supervised is: 0

Physical and Environmental Demands: Predominant work is performed in a normal office environment and in the field, involving:

- Exposure to extreme weather, to loud noises, high temperature substances and high-speed traffic.
- Lifting heavy objects (core samples, analytical equipment, etc.) up to 50 lbs.
- Walking over uneven terrain or in water

Knowledge, Skills and Abilities (Behaviors):

- Extensive knowledge of the concepts and theories of geotechnical engineering, geology, mathematics, the physical sciences, and highway and bridge design.
- Knowledge of methods and practices of highway construction and construction engineering; engineering policy, materials properties, specifications, and test methods; and construction safety practices.
- Thorough knowledge of contract law and contract administration, traffic engineering; highway economic, safety, and efficiency issues.
- Knowledge of Engineering Division objectives and Materials Bureau goals; project planning; research methods and techniques; State, Federal AASHTO, and FHWA requirements and standards; project specifications; Montana Materials manual, Construction Manual, Traffic Engineering Manual, Standard Specifications for Road and Bridge Construction, and a variety of other specialized engineering manuals and documentation.
- Knowledge of highway construction methods and techniques; transportation planning, design, and highway construction processes; field applications of highway engineering and construction; environmental rules and regulations; and construction methods and practices.
- Knowledge of geotechnical design requirements and MDT policies. This knowledge must include not just the content of the requirements but the fundamental geotechnical behaviors or construction limitations behind the code provisions or policies so that when conflicts or ambiguity arises the Geotechnical Engineering Specialist can apply professional judgment in a reasonable and safe manner to resolve the issue.
- Basic knowledge of geotechnical earthquake engineering principles to perform the earthquake analysis and design.
- Advanced skill in reading and interpreting complex plans and contract documents; project management; drawing conclusions and making recommendations; assessing construction plans and projects.
- Skill in interpreting and writing specifications as well as the ability to use logical and understandable approaches to analyzing geotechnical projects.
- Skill and the ability to plan and manage numerous phases of multiple projects; interpret complex designs, plans, drawings, statutes, and regulations; apply analysis and judgment in arriving at solutions to difficult engineering research, and contract problems.

- Skill and the ability to exercise professional judgment to arrive at timely decisions in complex situations.
- Skills in communication and negotiation; developing and administering a variety of diverse projects and functions; and developing ideas and solutions for complex problems.

Minimum Qualifications (Education and Experience):

- The required knowledge and skills are typically acquired through a combination of education and experience equivalent to Bachelor's Degree in Civil Engineering, Geology, or a related engineering degree recognized as eligible for PE/PG licensing.
- Four (4) years of experience in Civil Engineering, Geology, or related area. This should include a minimum of two (2) years geotechnical engineering experience related to highways, structures, slopes, or similar facilities.
- Certifications, licensure, or other credentials include: Professional Engineer (PE) or Professional Geologist (PG) is required.
- Alternative qualifications include: Any combination of additional related work experience and education equivalent to the minimum qualifications.

Special Requirements:

☐ Fingerprint check	☒ Valid driver's license
☐ Background check	☐ Other; Describe
Union Code	Safety Responsibilities

The specific statements shown in each section of this description are not intended to be all inclusive. They represent typical elements and criteria considered necessary to perform the job successfully.

Signatures

My signature below indicates the statements in the job description are accurate and complete.

Immediate Supervisor **Title** **Date**

Administrative Review **Title** **Date**

My signature below indicates that I have read this job description.

Employee **Title** **Date**

Human Resources Review

Job Code Title: Construction Specialist 2 **Job Code Number: S11012**

My signature below indicates that Human Resources has reviewed this job description for completeness and has made the following determinations:

☐ FLSA Exempt	☒ FLSA Non-Exempt
☒ Telework Available	☒ Telework Not Available
☒ Classification Complete	☒ Organizational Chart attached

Human Resources:

Signature **Title** **Date**