

# 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: Subsurface Exploration Crew Leader      Position Number: 46001, 46009, 46010**

**Location: Helena      Department: Transportation**

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

**Section and Unit: Field Investigation Unit**

**Job Overview:** This position serves as the subsurface exploration crew leader and is responsible for planning and overseeing on-site subsurface exploration projects consisting of various drilling methods, Cone Penetration Testing, and geophysical methods. Duties include overseeing subsurface exploration projects and subsurface exploration technicians; operating, maintaining, and repairing drilling, and support equipment and tools; and providing training and technical assistance to subsurface exploration technicians. The incumbent reports to the Field Investigation Unit Supervisor (46005) and indirectly supervises two subsurface exploration technicians.

## **Essential Functions (Major Duties or Responsibilities):**

### **Subsurface Exploration Project Oversight - 50%**

This position oversees on-site subsurface exploration operations according to the investigation request and specific conditions present at each site to ensure exploration and sampling occur efficiently and safely.

- Plans and directs exploration projects as received from the Field Investigation Unit Supervisor or Geotechnical Engineer and organizes the transport of subsurface exploration technicians and equipment to specific sites to ensure the necessary resources and personnel arrive on-site safely and at the appointed time.
- Once on the project site, completes the Tail-Gate safety form, going over the information with the other members of the crew and ensuring that they understand the information.

- Determines the initial site surface conditions (topography, vegetation, etc.) and on-site properties of soil and rock including a physical description, relative strength and depth of changes in materials, and water levels to determine specific sampling procedures and equipment needs.
- Determines the equipment type, operational method, and location of in-place soil strength tests based upon exploration needs outlined by geotechnical engineers. Oversees the application of the appropriate testing methodology to establish engineering properties using a variety of methods, including split tube SPT sampler, Shelby tube undisturbed sampler, Cone Penetration Test equipment, in-place vane shear tests, and triple tube wireline core barrels to determine Rock Quality Designation.
- Assesses equipment needs prior to commencing exploration projects to determine optimum equipment relative to safety considerations, costs, and type of operation. Completes daily drilling report logs detailing equipment used and received, locations of exploration points, etc., to ensure adequate documentation according to applicable standards and Department policies and procedures..
- Monitors personnel involved in exploration operations and provides on-going training in the safe transport and handling of equipment and tools and appropriate work zone sign placement. Ensures coworkers are aware of potential hazards and special exploration conditions or considerations.
- Determines supply and equipment needs, and develops purchase requests for review by the Unit Supervisor. Purchases supplies and replacement products for field projects.

### **Subsurface Exploration Operations- 35%**

This position operates and maintains a variety of subsurface exploration equipment, cone penetration test equipment, tooling, and sampling equipment as well as providing training and technical assistance to subsurface exploration technicians during drilling projects.

- Conducts specialized and/or complex drilling and subsurface investigation projects, i.e., the design and implementation of drilling fluid systems, barge drilling operations, traffic control set up, etc., and explorations projects with critical deadlines or under emergency situations.
- Checks exploration locations and utility locates using a variety of tools and GPS equipment and documents the information to ensure exploration operations conform with project requirements and state law requirements
- Guides the installation of piezometers, total pressure cells, slope inclinometers, extensometers and other geotechnical monitoring equipment. Assists the geotechnical engineer with the installation of solar panels and data collection phone modems to transmit data back to headquarters office.
- Manages the operation of equipment during subsurface soils investigations and instrument installation to collect geologic and hydrogeologic data necessary for the development of roadway, structure, slope, and drainage for specific project design.

- Oversees the collection and preservation of soil and rock samples by assessing the exploration project requirements and using a sampling method necessary to collect and assemble samples for delivery to a laboratory for engineering property testing.
- Perform routine and emergency maintenance and repair of specialized equipment (exploration equipment) and tools (pumps, air compressors, fluid circulating units, etc.) in the field to ensure that material samples are properly collected and drilling deadlines are met.
- Oversee the cone penetration test while in progress and perform dissipation tests as needed along with shear wave velocity testing.
- Sets up electrical resistivity testing equipment, uses the ground penetrating radar and helps with the seismic refraction equipment under direction from geotechnical personnel.
- Maintains the three Geobrugg GBE 500 mobile rockfall barriers the Geotech department owns. Confirms the inventory list prior to deployment and verifies it upon return by private contractor or maintenance.
- Sets up temporary traffic control according to the MUTCD and maintains a traffic control technician level certification.

### **Indirect Supervision - 10%**

This position indirectly supervises 2 subsurface exploration technicians.

- Establishes and revises overall field exploration work, priorities, and procedures and monitors progress through meetings and consultations. Conducts field safety meetings and goes over the Tail-Gate Safety Sheet and, disseminates information, and promotes information exchange to support and advance Department goals and objectives.
- Develops and recommends overall site safety responsibilities regarding all aspects of performing subsurface investigations.
- Determines and fulfills on-site training needs of subordinate staff and provides ongoing guidance and technical assistance as necessary.
- Monitors and manages the performance of subordinates during field work. Ensures staff compliance with standard procedures and safety protocol. Ensures that all staff are provided an opportunity to operate exploration equipment in differing soil and rock conditions.
- Provide input to the Unit and Bureau Supervisors on position descriptions and performance standards. Relay information to the Supervisor regarding staff performance based on observable, measurable appraisal standards. Recommend, implement, and monitor corrective actions.
- Present recommendations for improving workflow and staff performance. Ensure unit staff has the supplies, materials, and equipment needed to carry out their work.

### **Other Duties - 5%**

- This position performs a variety of other duties assigned by the Unit Supervisor in support of ongoing Unit and Section operations.

## **Supervision**

The number of employees supervised is: indirectly supervises 2 positions

The position number for each supervised employee is: varies

## **Physical and Environmental Demands:**

- Lifting heavy objects (up to 75 lbs.) on a regular basis
- Ability to walk over uneven terrain or in water
- Exposure to extreme weather
- Exposure to loud noises
- Exposure to high-speed traffic
- Possible exposure to environmental contaminants.
- Extensive travel and long hours
- Operating a personal computer
- Demands for accuracy in all aspects of work
- Ability to meet inflexible deadlines
- Decision making that affects public health and safety
- Perform duties under stressful conditions
- Operating a commercial vehicle over 14,000 GVW, in traffic.

Most of the work is performed at various field project locations involving extensive statewide overnight travel (in excess of 12,000 miles a year) as well as hazards and demands associated with an active project site, including exposure to high-decibel noises and heavy equipment; traversing rough and uneven terrain; and extreme weather and driving conditions. The incumbent must be able to lift and transport supplies, samples, and equipment weighing in excess of 75 pounds. Unanticipated project problems, safety concerns, and other impediments require the incumbent to work long hours.

## **Knowledge, Skills and Abilities (Behaviors):**

This position requires thorough knowledge of the methods and techniques of subsurface investigation and sampling; Environmental Protection Agency regulations governing safety and techniques of drilling and sampling soil and water known to be contaminated with hazardous materials; methods and techniques used in monitor well installation and abandonment as well as

precautions against cross contamination of groundwater resources; and applicable State, federal, AASHTO, and FHWA requirements and standards.

This position requires skill in operating, maintaining, and repairing specialized exploration and sampling equipment and tools, vehicles, and various drilling support equipment and hand tools, equipment maintenance and repair, and light duty welding and fabrication. Proper Hole abandonment procedures for , artesian conditions, instrumentation and general borings. Knowledge in rotary mud exploration including mixing ratios and incorporation of appropriate additives

### **Minimum Qualifications (Education and Experience):**

The required knowledge and skills are typically acquired through a combination of education and experience equivalent to a high school diploma or equivalent.

This position requires a minimum of three (3) years progressively responsible experience in geotechnical exploration operations, soil sampling, diamond core drilling, and geotechnical instrumentation installation.

Certifications, licensure, or other credentials include: The incumbent must possess and maintain a valid Class A/Type 2 driver's license with air brake and tanker endorsement. .

Alternative qualifications include: Any combination of education and experience equivalent to the minimum qualifications.

### **Special Requirements:**

*List any other special required information for this position*

<input type="checkbox"/> Fingerprint check	<input checked="" type="checkbox"/> Valid driver's license
<input type="checkbox"/> Background check	<input type="checkbox"/> 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: Drill Operator 2 Job Code Number: S52012      Level: 2**

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

<input type="checkbox"/> FLSA Exempt	<input checked="" type="checkbox"/> FLSA Non-Exempt
<input type="checkbox"/> Telework Available	<input checked="" type="checkbox"/> Telework Not Available
<input checked="" type="checkbox"/> Classification Complete	<input type="checkbox"/> Organizational Chart attached

**Human Resources:**

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<b>Signature</b>	<b>Title</b>	<b>Date</b>
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