

# 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: District Engineering Automations Specialist**

**Position Number: 57039, 55004, 92588**

**Location: District**

**Department: Transportation      Division and Bureau: Engineering**

**Section and Unit: n/a**

### **Job Overview:**

The position serves as the District Automations Specialist and liaison between Survey, Design, and Construction for MDT design and survey software systems and practices and ensures consistency in the use of these systems through application of policy, procedures, QA/QC processes, and ensures effective sharing of data between systems as it relates to the automation of related activities. The position provides guidance to MDT project teams, managers, construction staff, and business partners in developing data and procedures for use in construction automation. Included in the scope of construction automation is automated machine guidance, control processes and related activities (collectively referred to as AMG) used in support of incorporating digital 3D design information into transportation improvement projects. This position is responsible for evaluation, and implementation of new and emerging technologies related to engineering automation that may be beneficial to the agency; develops standards and specifications for its use; coordinates and provides training; deployment; drafting policy and guidelines; and provides subject matter expert advice and day to day technical support to engineering staff in the use of these technologies. The candidate must have strong knowledge and competence in engineering survey, roadway design, and roadway and bridge construction activities.

This position reports to the District Preconstruction Engineer.

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

#### **Program and Process Development and Administration      65%**

Develop, implement, and administer the district's data automations program.

- Analyze current automations systems and available new technologies and develop the needed processes and procedures for the department's design, survey and construction survey software systems and practices in data automation.
- Develop the automations QA/QC processes to assure the needed accuracies and data sharing is achieved between systems and technologies.
- Performs quality control of data outputs from systems to ensure established accuracies are being achieved and data composition is configured appropriately for downstream use.
- Ensures data transfer between systems maintains accuracy and design intent.
- Incorporate the digital 3D design into design, survey, and construction procedures
- Provide technical expertise, oversight and compliance of the data automations systems and processes.
- Trouble shoot complex automation system issues and develop solutions and lessons learned to solve problems. Manage and incorporate changes to department processes and procedures to continue process improvements for data automations.
- Researches and understands MDT Engineering Division, ISD Division and Department of Administration Information Services processes, procedures, policies, and regulations. Analyzes and identifies non-survey systems, software and hardware that need to interface with survey systems, software and hardware and the integration and interface conditions that are necessary for compliance with applicable policies, regulations, and MDT Engineering Division objectives.

Administer, manage, and implement new technologies & innovations for 3D design, survey, and construction automations.

- Provides guidance to the department and business partners in developing data and procedures for use in construction automation.
- Develop automation processes and procedures.
- Implement construction automation, automated machine guidance, control processes and related activities used in support of incorporating digital 3D design information into transportation improvement projects.
- Performs in-depth analyses of automation methodologies and engineering design concepts and practices to incorporate into the future implementation of these related new technologies and procedures.

Automations Operations, Best Practices/Procedures and Maintenance

- Implement the development of technology, procedures, guidelines and assist with policy drafting and adoption for using this software and equipment statewide.
- Organize and manage survey system planning activities. Provides specialized guidance, analysis and knowledge regarding survey practices, procedures, systems, software and equipment for survey system and Engineering Division long-term planning activities.

- Oversee and develop solutions that provide and maintain survey integration and interface with other units and divisions.
- Develop, implement, and manage the automations maintenance plan.
- Provides expert knowledge and develops custom solutions to survey systems addressing integration, interface, maintenance and operational problems and issues.
- Ensures MDT automations practices, procedures and policies meet current and future Engineering Division objectives and industry standards.
- Documents procedures, best practices, and lessons learned for use by department personnel.
  - Understands, reviews, and analyzes MDT survey, road design, and construction procedures and policies for effective and efficient performance in accordance with Engineering Division objectives.
  - Researches and analyzes industry and other state transportation agencies standards and procedures.
  - Drafts recommendations for MDT procedures and policies that provide for improved efficiency and effectiveness in accordance with MDT Engineering Division objectives and industry standards.
  - Coordinates and communicates with Headquarters and District staff and management regarding the effectiveness of current practices.
  - Serves as the District contact and information resource for coordination and communication with other State DOTs, industry experts and vendors to research and share practices and procedures that meet current and future MDT objectives, industry standards and improve survey and design software systems effectiveness and efficiency.

### **Automations Support and Training - 30%**

- Provide support and training to employees of the District, so they can effectively and efficiently perform their job duties.
- MDT uses engineering software technologies such as Computer Aided Design and Drafting software, GPS and conventional surveying technology and software for activities including preliminary and construction surveying, for the collection of quantities for contractor payments on various projects, and asset management.
- Support the use of software and equipment by District employees. Provide assistance and guidance on usage and troubleshooting issues.
- Coordinates with Headquarters Survey to provide training for design and construction employees throughout the District on the use of this software and equipment and perform necessary upgrades.
- Identifies user training proficiency and training needs. Reviews and tracks common errors and monitor systems output for inconsistencies. Coordinates with District and Helena Construction and Survey staff to identify and target training needs.

- Develops, maintains and updates help guides and technical help resources for survey systems, software, and equipment users.
- Coordinates with Highways, Consultant Design and Construction Bureaus for additional training to MDT staff, consultants and contractors as directed.
- Provides expert knowledge and develops the efficient data transfer through a project's life cycle.
- Assists District and Headquarters Surveyors and Engineering Managers in testing, configuration and implementation plans for survey systems, software and equipment acquisitions and upgrades.
- Provides expert knowledge and develops custom solutions to survey systems addressing integration, interface, maintenance and operational problems and issues.
- Serves as lead on assigned initiatives or projects.
- Troubleshoots survey systems, software and hardware issues and problems.
- Coordinates and communicates matters regarding survey systems, software and hardware integration and interface with MDT staff and management, consultants, and vendors.
- Serves as the District contact and technical resource for survey systems, software and equipment integration and interface matters.

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

Performs a variety of engineering activities, coordination and management duties as assigned by the District Preconstruction Engineer or District Administrator in support of Engineering Division objectives.

#### **Supervision**

The number of employees supervised is: 0

The position number for each supervised employee is: N/A

#### **Physical and Environmental Demands:**

- Moderate travel (up to 50% of time).
- Lifting objects weighing more than 30 lbs.
- Ability to walk over uneven terrain or in water.
- Exposure to extreme weather conditions and high-speed traffic.
- Operation of motor vehicles.
- Operation of survey and related equipment.

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

This position requires the ability to develop effective techniques and procedures to achieve goals and objectives; to provide clear directions, technical assistance, and guidance to team members; to assess complex and rapidly changing technological issues and national trends; identify root causes of problems and develop alternative solutions; confidently challenge the status quo by experimenting with new ideas; to accurately apply engineering standards and project requirements to specific circumstances; to evaluate multiple and ambiguous factors to resolve problems; to determine appropriate responses to engineering survey, design, and construction problems and deficiencies with minimal assistance or precedent; to communicate effectively orally and in writing; to demonstrate leadership by recognizing and initiating activities to accomplish objectives, and motivate associates and peers to work effectively in a multi-task and ever changing environment.

- Knowledge and experience with survey, design, and construction software such as MicroStation, GeoPak, Open Roads, TDS Survey Pro, Microsoft Office, Trimble Business Center, Trimble Access, etc.
- Knowledge of survey datums, adjustments, and geoid models.
- A working knowledge of civil engineering principles along with ability to develop a working knowledge of MDT engineering standards and specifications, project development, highway construction related to survey and measurement and payment of bid items, training techniques and methodologies, computers, computer programming, MDT survey system interrelationships with other MDT systems.
- Interpersonal skills and behaviors.
- Ability to creatively develop solutions to complex and unique problems in independent and team environments.
- Flexibility and adaptability to handle changing priorities and conditions.
- Skill in directing, organizing, and coordinating multiple staff and complex projects; examining, interpreting, and translating technical information to broad audiences; and use of standard office software applications (e.g., word processing, database, etc.).
- Skill in the use of specialized surveying equipment such as electronic total stations, digital levels, data collectors, CADD workstations, automated systems, GPS survey equipment, and misc. other tools and technologies.

### **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, Civil Engineering Technology, Surveying, or a related field.

This position requires a minimum of 4 years of experience in highway and bridge survey, design, or construction. This position requires a minimum of 1 year of supervision or team lead experience.

Certifications, licensure, or other credentials include: N/A

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

### Special Requirements:

*List any other special required information for this position*

☐

Fingerprint check

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Valid driver's license

☐

Background check

☐

Other; Describe

MFPE 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.

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<b>Immediate Supervisor</b>	<b>Title</b>	<b>Date</b>
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<b>Administrative Review</b>	<b>Title</b>	<b>Date</b>
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My signature below indicates that I have read this job description.

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<b>Employee</b>	<b>Title</b>	<b>Date</b>
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**Human Resources Review**

**Job Code Title: Engineering Analyst 2   Job Code Number: D25012   Level: 2**

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:**

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**Signature**

**Title**

**Date**