

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: Bridge Area Engineer **Position Number:** 80050, 50013, 50055, 50007, 50002

Location: Helena

Department: Transportation

Division and Bureau: Engineering Division, Bridge Bureau

Section and Unit: Bridge Design Section

Job Overview:

This position is a Bridge Projects Design Manager within a given District. The position is responsible for managing the progress of all preconstruction activities for several concurrently ongoing bridge replacement and rehabilitation projects, and bridge and structures activities in other Highway projects in that District. The position is responsible for managing, developing, and documenting the preconstruction activities from project assignment to contract award including project risk assessments, working with stakeholders, initiating appropriate public involvement, as well as overseeing the structural engineering, design, and preparation of bridge plans, special provisions and cost estimates. This position reports to the Bridge Design Engineer.

Essential Functions (Major Duties or Responsibilities):

Bridges and Structures Project Management 70%

Responsible for project scope development, project schedule, engineering analysis and oversight of design activities to ensure projects are delivered on time, within budget and with quality to meet the purpose and need of projects, and in accordance with all engineering, environmental, Departmental and regulatory requirements. Assign staff, assemble design teams, prioritize tasks, make decisions, provide technical expertise and coordinate with other bureaus, sections, and District personnel in support of Bridge project development and structures portions of other Highway projects.

1. Manages a variety of projects involving bridge replacement and rehabilitation. Responsible for acquiring and interpreting complex technical and engineering data and using that information to formulate recommendations and decisions on the direction of the project. Analyze and weigh all information and recommendations, and make decisions that result in the best outcome for the project, the Department, and all stakeholders. Advanced communication skills, management skills, conflict resolution skills, subject matter expertise, and experience are required to make balanced and effective decisions.
2. Responsible for implementing a work plan so that agency approvals are obtained and contract documents are completed on schedule. Directly and indirectly manage multi-discipline design team members from various MDT design units, the District, and at times, consultants. Determines project priorities through coordination with the Program Manager, District Administrator and other internal stakeholders, which may be in conflict with one another. Communicates project priorities using various tools and methods, including Engineering Project Scheduler, PPMS, the Tentative Construction Plan, and directly with the project team on an ongoing basis.
3. Develop proposed scope of work for projects based on input received, knowledge of design criteria and site constraints, results of environmental evaluations, public input, and contextual needs. Acquire the necessary approval for the scope of work and any proposed changes. Identify risks associated with project scope, schedule, and budget and implement measures to mitigate risks.
4. Arrange and conduct pre-program field reviews and plan-in-hand inspections. This involves soliciting comments, attempting to resolve discrepancies and differing views, and attaining agreement or consensus of design solutions to engineering problems. Review, distribute, and document decisions made at reviews.
5. Perform risk assessments and studies of design alternatives, which are used to determine optimum locations and features for a particular project and best use of available funding. This could include cost analysis to conclude if an existing structure should be rehabilitated instead of replaced. Must also consider the constructability of different alternatives and weigh all factors in determining the best option. Studies are evaluated by purpose and need, cost, risk, and environmental impact and the choice for final or additional design is made on these alternatives.
6. Corresponds with local, State, and Federal personnel and agencies to obtain necessary approvals. Distributes information and coordinates the design with the District and other involved sections and bureaus. Regularly communicates the numerous design decisions and considerations involved in selecting the components of the proposed design.
7. Directs and oversees the work of structural design teams composed of professional and technical personnel in the preparation of designs, plans, engineering estimates, special provisions, and specifications used for the construction of bridges and other highway structures. This includes all phases of bridge design and plan development from preliminary layout to final plans for contract.

8. Determines, applies and directs the application of the proper methods to achieve economical and safe structures. This involves the use of many computer applications and the ability to interpret AASHTO codes in addition to using sound engineering judgment on a daily basis. These codes are revised yearly and may require that changes in programs and design procedures be implemented. Researches and applies innovative techniques to the design to maximize the value and performance of structures. Takes the results of value analysis studies and determines which recommendations are applicable to the project within the project constraints.
9. Manages preliminary engineering design budget for projects. This involves communication and coordination with Functional Managers to develop initial budget, address issues to stay within budget and to determine budget modifications. Determine and control estimated construction cost of project. Use different estimating techniques that account for risk and contingency depending on the information available to determine construction estimate. Revise estimate as project develops in accordance with risk analysis, changes in scope of work and refinement in the design and plan details.
10. Attends public informational meetings, makes presentations, and responds to questions concerning location and design features of the project. Prepares agreements between the State, counties, and/or cities.

Staff Supervision 15%

Provides technical and general supervision to assigned design staff in order to ensure accurate and professional design applications and consistency for District projects by providing leadership, supervision, training, and performance evaluations.

1. Directly supervises professional engineering and design staff assigned to the district crew. Develops overall work plans, established priorities, ensures proper procedures are followed, and monitors progress through direct communication, meetings and consultations with staff. Selects project design teams and assigns work based on availability, skill set, and growth and mentorship opportunities. Conducts meetings, disseminates data, and promotes information exchange for support and advancement of Bureau and Department goals. Uses learned and natural leadership, communication and management skills.
2. Determines training needs of staff through analysis of program effectiveness; new structural engineering procedures, specifications, and policies; evolving technologies; and staff performance. Prepares, presents, or coordinates training through personnel specialists, training offices, or outside consultants to ensure that modern technologies and operational strategies are available.
3. Identifies staffing needs, assists with recruiting and hiring employees, and allocates staff to adequately support ongoing project operations and activities in the Bureau. This involves ensuring compliance with State and federal employment and civil rights laws throughout the hiring process, participating on personnel screening and selection committees, reviewing

results and making final recommendations for hiring, and ensuring proper training and orientation of new employees.

4. Evaluates the performance of positions directly supervised and completes performance evaluations. Recommends, implements, and monitors corrective actions. Enforces disciplinary policies to ensure consistency in the application of disciplinary actions.
5. Ensures that staff complies with State and Department personnel rules, regulations, and policies. Resolves grievances at the lowest level whenever possible. Decides when to bring in higher level supervision based on past experience and learned management techniques.

Technical Consultation and Expertise 10%

Provide professional engineering advice and design information to assist the Construction Bureau and District Offices in project completion. Provide assistance and advice to construction crews in the interpretation and application of original design plans. This work ensures that actual project designs are in compliance with original plans and applicable regulations. Develop engineering alternatives and innovative approaches to construction design problems (e.g., unexpected site or environmental conditions, design flaws, safety concerns, aesthetic problems, etc.). This involves advanced engineering design, research, and coordination among various MDT work units to identify and resolve construction or design deficiencies.

1. Assists with selection, management and evaluation of Term Contracts and Project Consultants. Provides technical evaluation of Plans, Specials and Estimates submittals for bridge and structures aspects of Consultant Designed Projects at all project milestones.
2. Develops and improves computer applications, design practices and procedures used by the Bureau. Develops and improves standard specifications and detailed drawings when required. Solicits input from peers and completes independent study to determine which information is appropriate to incorporate into the revisions.
3. Reviews plans and proposals of external agencies and private entities for work that will have temporary or permanent impact to the state's highway infrastructure or the traveling public. Provides technical expertise to department staff responsible for permitting these developments or activities to ensure that design criteria for the route is met, and that undesirable impacts are avoided or mitigated.
4. Conducts and works on committees and or special assignments for improving the Department or Bureau operations as requested by supervisor or Bureau Chief.

Other Duties 5%

Manages special projects, coordinates meetings and conferences, participates in ongoing training and professional development activities, and performs a variety of other duties as assigned by the Bridge Design Engineer or Bureau Chief to maintain the necessary level of knowledge personally and within the Bureau.

Supervision

The number of employees supervised is: 3-5

The position number for each supervised employee is: Job Titles supervised in various combinations of at least 1 from each category: Civil Engineer PE (50004, 50005, 50023, 50032, 50042, 50050, 80052), Civil Engineering Specialist (50016, 50041, 50044, 50057, 50058), and Designer (50024, 50033, 50045, 50046, 50053).

Physical and Environmental Demands:

Physical:

- Light lifting (less than 20 lbs.) ;
- Carrying light items (papers, books, small parts);
- Remaining seated for extended periods of time, with occasional walking, standing, bending;
- Traveling within the state to project locations, occasionally out of state for conferences and meetings;
- Operating a personal computer;
- Communicating in writing, in person, and over the phone.

Mental:

- Multi-tasking;
- Meeting demands for accuracy in all aspects of work;
- Meeting inflexible deadlines;
- Prioritizing work to meet goals and deadlines;
- Concentrating to perform complex arithmetic operations and analysis;
- Communicating engineering concepts to people with vaying levels of knowledge and education;
- Coordinating with people having different priorities, backgrounds, cultures, etc.;
- Interpreting complicated technical papers, manuals, publications and reports;
- Managing stress from the responsibility of supervising and making decisions that affect public health and safety.

Knowledge, Skills and Abilities (Behaviors):

List the knowledge, skills and abilities (behaviors) typically required for the first day of work. You may also list preferred knowledge, skills and abilities.

KNOWLEDGE

This position requires a thorough knowledge of the theory, principles, methods and techniques of civil and structural engineering and associated mathematics and physical sciences; working knowledge of the methods and practices of the other divisions and work units in MDT such as Planning, Engineering (geotechnical, hydraulics, road design, environmental, traffic, survey, etc), Construction and Materials; the engineering policy, methods and procedures of the Department of

Transportation and applicable regulations, standards and specifications, AASHTO Bridge Design Specifications and Guides. Knowledge of the practices and regulations of personnel management and supervision; administrative and management concepts and practices.

SKILLS

This position requires skill in effective team building techniques; effective written and verbal communications; organizing, directing and supervising professional and paraprofessional personnel; dealing tactfully with the public and with governmental officials; and planning, organizing, and directing multiple engineering activities for short and long-term projects. The position also requires skill in developing and evaluating solutions to complex engineering problems by classical methods and advanced computer applications; applying analysis and professional judgment to draw conclusions and make recommendations; assessing construction plans and projects; and exercising engineering judgment in the interpretation of design codes, field and research data.

ABILITIES

This position requires the ability to plan, organize and direct multiple engineering activities; to manage and supervise a staff of professional and technical personnel; to apply analysis and professional judgment in arriving at solutions and in making appropriate choices among options and alternatives; to solve unusual and difficult engineering problems; to establish and maintain effective working relationships with employees, other agencies and the public; to communicate effectively orally and in writing; to make engineering presentations to the public; to work effectively in a high stress and multi-task environment.

Minimum Qualifications (Education and Experience):

The required knowledge and skills are acquired through education at least equivalent to a Bachelor's Degree in Civil Engineering or closely related engineering field with an emphasis on structural design.

This position requires a minimum of 1 year of experience in bridge structure design and engineering.

This position requires a minimum of 1 year of supervision, team lead experience, or equivalent education in an approved management development course.

Certifications, licensure, or other credentials include: Professional Engineering license in the State of Montana, or through comity at time of hire.

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
- Background check
- n/a Union Code
- Valid driver's license
- Other; Describe
- yes 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
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Administrative Review	Title	Date
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My signature below indicates that I have read this job description.

Employee	Title	Date
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