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 Load Rating QA Engineer Position Number: 50074 Location: Helena

Department: Transportation

Program Area and Bureau: Project Development & Delivery/Bridge Bureau

Section and Unit: Bridge Load Rating Section

Job Overview: This position is an experienced and licensed professional structural engineer that provides statewide technical lead for bridge load rating, overweight vehicle permitting, and bridge condition inspection. The position is an expert in load rating and one or more major types of bridges such as steel girders, trusses, timber, prestressed concrete, or others. This position also administers MDT's Load Rating Quality Assurance (QA) to meet NBIS requirements, coordinates bridge operations with Motor Carrier Services, and assists with the bridge maintenance and scour program. This position travels statewide approximately 15% of the time, to work with bridge inspectors and review bridge inspections and repairs.

This position collaborates closely with the Bridge Inspection QA Engineer to meet program objectives. The Bridge Load Rating QA Engineer oversees quality assurance for bridge load rating activities and provides support on bridge inspection matters, while the Bridge Inspection QA Engineer leads quality assurance for bridge inspection activities and assists with bridge load rating topics. These complementary roles work in tandem to strengthen and complete each other's QA efforts, providing seamless, statewide technical leadership to bridge inspectors and load rating engineers in support of Montana's Bridge Load Rating, Bridge Inspection, and Tunnel Inspection programs.

Essential Functions (Major Duties or Responsibilities):

Bridge Load Rating Operations 65%

Leads the development, implementation, and administration of the Quality Assurance (QA) program for bridge load rating across the state. Directs QA activities to ensure load rating analyses are accurate, consistent, and compliant with federal, state, and MDT policies. Establishes statewide standards, methodologies, and procedures for bridge load rating using the AASHTOWare BrDR software suite, including the automation of ratings to improve efficiency and reliability. Provides authoritative guidance on structural data input for load rating, ensuring that bridge models are accurate, consistent, and reflect current field conditions. Oversee review and verification of load rating outputs, calculations, and alternative methods to confirm technical precision and uniformity of results. Represents MDT on the national BrDR steering committee, contributing feedback, technical expertise, and recommendations for enhancements in future software releases. Determines and recommends appropriate funding levels to support BrDR development, upgrades, and maintenance.

Leads QA for MDT's bridge load posting program. Establishes and updates load posting procedures to ensure highway safety while preserving infrastructure and complying with NBIS and FHWA requirements. Coordinates the implementation of new or revised load postings following load rating analyses, bridge condition changes, or rehabilitation and repair projects. Develops and oversees systems for tracking bridge rehabilitation and repair work to identify when follow-up inspections and load ratings are required. Directs coordination between inspection teams and load rating engineers to promptly update load postings following structural improvements or deterioration detection.

Manages consultant support for load rating projects. Coordinates consultant selection processes with the Consultant Design Bureau for load rating term contracts and specialized bridge load rating services. Oversee and evaluate consultant performance to ensure contracted services meet quality, timeliness, and technical requirements.

Supports the Permitting Engineer in overweight vehicle and route analysis efforts. Directs and performs overweight vehicle and route analyses to ensure department policies maximize safety and structural integrity, while meeting motor carrier transportation and commerce needs. Develops and revises overweight permitting policies and requirements to reflect changing bridge conditions, engineering standards, and safety considerations. Coordinates with the Motor Carrier Services Division to evaluate permitting processes, customer service needs, and operational efficiency. Oversee route analyses and develops reasonable, consistent restrictions that integrate safety, efficiency, and economic considerations. Performs detailed analyses of bridges along proposed routes to determine the ability to pass or bypass overweight loads, applying conditions based on the most recent bridge condition data.

Provides statewide technical leadership in bridge load rating and posting. Serves as MDT's technical authority for resolving complex load rating and posting issues. Develops and delivers training for engineers, inspectors, and technical staff on load rating methodologies, posting procedures, and BrDR software usage. Monitors national trends, research, and best practices in load rating and posting to integrate improvements into MDT's programs and policies.

Coordinate NBIS and NTIS Programs 20%

Supports the Bridge Inspection QA Engineer by providing technical expertise and assistance for the NBIS bridge condition inspection program and the NTIS tunnel condition inspection program.

- Assists the Bridge Inspection QA Engineer and District Bridge Inspection Supervisors in evaluating engineering issues identified during condition inspections, offering load rating perspectives to help determine implications for individual bridges and the statewide inventory.
- Supports NBIS inspectors in assessing the capacity impacts of changed conditions noted during bridge inspections, including performing structural load rating analyses when needed.
- Contributes to the administration of the NBIS Quality Assurance program by participating in office and field QA reviews, cross-district evaluations, and program updates aimed at maintaining uniform coding standards and compliance with inspection requirements across the state.
- Provides input from a load rating standpoint to help design program changes that improve data integrity and enhance bridge safety.
- Reviews and advises on standards for the NBIS Bridge Condition Inspection program to ensure alignment with FHWA guidelines and integration of best practices from state and national inspection programs.
- Collaborate with District Bridge Inspection Supervisors to evaluate and implement proposed changes that impact both inspection and load rating procedures.
- Supports the development of policy changes for the MDT Bridge Inspection Manual, Tunnel Inspection Manual, and Load Rating Manual as they relate to inspection findings.
- Contributes load rating expertise to statewide bridge inspector meetings, recommending relevant training topics and coordinating with other subject matter experts for presentations.
- Provides targeted technical support on specialized areas of bridge condition and analysis—such as steel fatigue, timber deterioration, or concrete beam rehabilitation—where load rating knowledge can enhance inspection outcomes.
- Assists in coordinating consultant selection processes with the Consultant Design Bureau for specialized bridge inspections and supports the management of related consultant contracts.
- Advises inspectors on proper data entry in the bridge database (AASHTOWare BrM) to ensure load rating information is accurately integrated.
- Helps assess training needs and contributes to the development of procedures and policies for effective use of bridge database systems in alignment with inspection program requirements.

Bridge Maintenance Support 5%

Provides coordinated bridge condition inspection and bridge maintenance. Facilitates prioritization of routine maintenance activities to optimize bridge preservation. Provides information on trends, deterioration rates, and severity, in order to optimize maintenance strategies. Assists the Bridge Maintenance Engineers in planning, coordinating, and performing specific bridge maintenance operations. Provides technical expertise and assistance in developing and executing specific, technically demanding, repair strategies.

Bridge Design 5%

Assists Bridge Design personnel in identifying bridges in need of repair, rehabilitation, and/or replacement. Provides technical assistance in producing final load ratings for newly designed bridges. Expert consultant for design crews on areas of expertise. These expertise areas are bridge design areas such as steel girder fatigue, pin and hanger design, concrete rehabilitation and detailing, timber condition and rehabilitation, or others.

Other Duties 5%

The position performs additional activities as assigned by the Bureau Chief in support of MDT's mission and division objectives. These responsibilities include participating in interdepartmental task forces, directing special projects, and pursuing ongoing training and professional development. The position also develops training guides and manuals for internal MDT staff and consultant NBIS inspectors on a variety of topics related to bridge maintenance and structure management.

Supervision

The number of employees supervised is: 0

The position number for each supervised employee is: not applicable

Physical and Environmental Demands:

- This position functions in a typical office environment with travel to project locations in the field.
- Walk over uneven terrain, or in water, walk on structures spanning significant heights (i.e., 100+ feet), and use safety equipment (e.g., fall protection, hardhats, steel toe boots, etc.)
- Travel within the state to project locations (varies between 500 and 2500 miles per month), and out-of-state travel by airline to national conferences and meetings

Knowledge, Skills, and Abilities (Behaviors):

- This position requires a thorough and extensive knowledge of the theory, principles, methods and techniques of Civil Engineering and the associated mathematics and physical sciences, especially the methods and practices of bridge structural analysis.
- This position must be familiar with industry standards and specifications, bridge design and load rating standards, bridge and tunnel inspection standards, bridge and road construction methods and policies, industry guidelines and practices.
- Knowledge of the practices and regulations of personnel management; administrative and management concepts and practices.
- This position requires skill in effective written and verbal communications; organizing, directing and supervising professional and paraprofessional personnel; skill in project management, planning and organizing.
- This position must have demonstrated skills at performing structural engineering analyses and applying engineering concepts, techniques, and procedures to a variety of situations and circumstances. This position must be skilled at evaluating structural problems by examining evidence, discussions with peers and inspection personnel, reviewing calculations and contract documents to determine proper course of action; and skill in drawing conclusions and making recommendations based on ambiguous or conflicting information.
- This position requires skill in applying engineering judgment when interpreting design guidelines and standards, preparing calculations, reports, and other documentation necessary to complete inspection, repair, maintenance, and design projects.
- Communication: Initiates contact and regularly counsels the Districts (and others) to develop an understanding of needs, problems, and progress; keeps in touch in order to avoid or solve problems and clarify misunderstandings. Communicates effectively in a high stress and multi-task environment.
- Leadership: Demonstrates a consistent pattern of being able to recognize and initiate activities that need to be done to accomplish an objective; motivates associates and peers; creates a positive work climate; energizes subordinates by coaching and mentoring.
- Relationship Building: Establishes and maintains effective working relationships by utilizing a "customer service mindset" with fellow employees, Districts, other agencies, NBI inspectors (both internal and MDT term Consultants), and the public. Develops on-going internal and external relationships that are important for the continuation of current services and practices; obtains organizational short-term and long-term goals by negotiating with others; develops customer success and growth.
- Teamwork: Displays leadership by focusing on the desired results and work products; acknowledges and celebrates team efforts and accomplishments; identifies and pursues solutions in which all parties can benefit; supports team decisions and outcomes through actions and communication.
- Self-Starter: Recognizes opportunities and takes effective action to achieve results without being told; frequently re-examines the status quo and responds to both obstacles and opportunities; willingly accepts more responsibility or more work.

- Problem Solving: Develops ideas that are unique contributions to the Department, the Bridge Bureau and Bridge Inspection Section; identifies root causes of problems and thinks of alternative solutions; challenges the status quo by experimenting with new ideas.

Minimum Qualifications (Education and Experience):

- A bachelor's degree in engineering from an ABET accredited engineering program that includes civil structural engineering courses in structural analysis, steel design, and reinforced concrete design.
- Graduate degrees with concentrations in structural analysis and design will be evaluated on a case-by-case basis.
- Registration as a Professional Engineer (PE) in Montana. Incumbents with PE registration in another State that are eligible for PE registration in Montana through Comity will be considered.
- Proof of successful completion (minimum 70% passing score) of a Federal Highway Administration (FHWA) approved comprehensive NBIS bridge inspection training course and certification as an NBIS Team Leader, or successful course completion and certification within 6 months 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	☒	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: PE 1 **Job Code Number: D25021**

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**