

Missouri Department of Transportation

Code: R05818

Title: Senior Structural Designer

Exemption Status: Non-Exempt

Grade: 9

Job Description

Effective Date 06-01-2025

Replaces
(Effective Date) 08-01-2024

General Summary

The senior structural designer is responsible for structural design computations and sketches for any type of highway structure, preparing bridge memoranda, layouts and preliminary cost estimates, cost estimating, writing special provisions and checking work performed by others. Responsibilities are performed under moderate supervision.

Minimum/Required Qualifications

Bachelor's degree in civil or structural engineering from an ABET-accredited college or university curriculum.

Four years of experience in civil engineering with a demonstrated proficiency in structural design or engineering applications. An advanced degree in civil engineering with an emphasis in structural design or engineering applications may be substituted for a maximum of two years of experience.

Supervisory Responsibilities

Lead Worker

Location

Central Office - Bridge

Special Working Conditions/Job Characteristics

A postsecondary degree is the best measure to ensure candidates possess required engineering knowledge, including in applied physics and mathematics, drafting, engineering processes and procedures, project management, industry ethical standards, and analyzing and modeling data.

Examples of Work

- (1) Performs structural design computations and produces sketches for any type of highway structure, including dynamic, hydraulic and seismic design for new structures, widening and major rehabilitation of existing structures, and staged construction.
- (2) Checks design and detailing performed by others for conformance to standards, procedures, accepted practices, and for computational errors.

- (3) Provides guidance to structural technicians and designers preparing plans for projects; provides advice and answers questions concerning constructability, structural theory, American Association of State Highway and Transportation Officials codes and design manuals to detailers and other structural designers.
- (4) Determines material composition and geometric layout of proposed structures to produce the proper and most economical layout by determining items such as length, spans, and type of structures and foundations.
- (5) Prepares bridge memorandums, writes special provisions, and prepares preliminary cost estimates for proposed structures.
- (6) Performs supporting calculations, reviews history files and assists in the development and revisions of manuals to keep engineering library updated.
- (7) Evaluates the structural capacities of new or existing bridges as required by state statutes and national standards.
- (8) Analyzes structures for special permit or construction loadings; performs field checks at bridge sites for preliminary layouts; conducts special studies such as analyzing non-standard pipe and precise box culvert designs.
- (9) Attends project meetings and consults/advises all parties involved including other department personnel, city, county, state, and federal personnel and private consultants.
- (10) Evaluates and utilizes engineering software and develops design aids such as flow charts, comprehensive spreadsheets, and examples.
- (11) Performs lead worker responsibilities, which may include providing general instruction, assigning and reviewing work, coaching and training, providing guidance and instruction in the proper and most efficient methods of accomplishing tasks, and providing input to the direct supervisor on staffing decisions and performance management.
- (12) Performs other responsibilities as required or assigned.