

Missouri Department of Transportation Job Description

Job Title: Senior Structural Hydraulic Designer

Title Code: R05596

Salary Grade: 9

Exemption Status: Non-Exempt

Supervisory Responsibilities: Lead Worker

District/Division: Central Office - Bridge

Effective Date: 05-01-2025

Replaces (Effective Date): 10-16-2024

General Summary

The senior structural hydraulic designer is responsible for performing hydrologic and hydraulic design computations, analysis, drawings, and sketches for the design of transportation related structures, such as routine bridges and box culverts. Responsibilities are performed under general supervision.

Minimum/Required Qualifications

- Bachelor's degree in civil engineering or related field with an emphasis on hydraulic or hydrology course work from an ABET-accredited college or university curriculum.
- Four years of experience in civil engineering with a demonstrated proficiency in hydraulic or hydrologic design or engineering applications. An advanced degree in civil engineering with an emphasis in hydraulic design or engineering applications may be substituted for a maximum of two years of experience.

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 complex hydraulic modeling, design, and analysis of any type of transportation related structure, and for the design of countermeasures for steam instability projects.
2. Performs hydrologic analyses to support preliminary and hydraulic projects.

3. Performs sediment transport and scour analyses for moderately complex structures to support preliminary and hydraulic projects.
4. Creates sketches by hand or using computer aided drafting and design applications as necessary to aid in the development of the hydraulic design and model.
5. Coordinates and reviews work and activities with appropriate division and district personnel to obtain valley sections, bathymetry, lidar, and other survey related data.
6. Works with a bridge location and layout designer to evaluate multiple alternatives to determine the most hydraulically, structurally, and fiscally practical design for the site.
7. Attends project meetings and consults/advises all parties involved including department personnel; city, county, state, and federal personnel; and private consultants.
8. Evaluates and utilizes engineering software and develops comprehensive spreadsheets.
9. Performs quality control of, and develops revisions to, internal manuals, specifications, guidelines, and computer programs.
10. 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 for accomplishing tasks, and providing input to direct supervisor on staffing decisions and performance management.
11. Performs other responsibilities as required or assigned.