

Alternative Job Titles

Structural Engineer, Structural Design Engineer, Civil Engineer, Senior Bridge Design Engineer, Lead Bridge Design Engineer

Job Description

A Bridge Design Engineer conducts structural analysis to ensure the strength and safety of highway structures, prepares structural design and contract documents including drawings, specifications, and estimates, participates in preparing the project budget and schedule, participates in meetings with clients and project team members, and reviews the structural calculations and contract documents prepared by others. A Bridge Design Engineer may be the principal design engineer on a project or the assistant design engineer on large, complex projects. Other duties include:

- Develop designs for other highway structures such as sign bridges and lighting supports.
- Analyze damaged bridges.
- Assess structural adequacy of existing bridges to withstand stresses due to oversized or overweight truck stresses to prevent damage or a bridge collapse.
- Prepare designs to upgrade an existing bridge by widening the deck, raising the deck, or strengthening the structure.
- Assess design related construction problems and erection schemes.
- Update bridge standards.
- Carry out design investigations of cranes, hoists, and similar apparatus used on bridge and highway maintenance to ensure structural stability and safety of operators.

Knowledge Requirements

- Civil and structural engineering
- Procedures of design and construction
- Mechanics of materials
- Soil mechanics
- Geotechnics
- Structural Failure Analysis
- Highway Design
- Hydraulics
- Economics and Life-cycle Costing
- Risk Management
- Warranty & Performance Guarantees

Required Skills and Abilities

- Develop and implement plans, policies, programs and procedures
- Materials specification
- Finite element analysis
- Cost estimation
- Public interaction
- Teamwork
- Organizing, scheduling and coordinating
- Written and oral communication
- Initiative and technical ingenuity in solving design problems

Technical Skills Requirements

- Computer-aided engineering analysis, design, and drafting software, such as AutoCAD Civil 3D, Geopak, SAP, STAAD, and Microstation

Typical Salary

- \$75,000 – \$104,700

**Sources: Burning Glass Labor Insights for salaries by experience and Glassdoor for upper and lower salary bounds.*

Education and Work Experience

- Bachelor's degree in civil engineering, with specialization in structural engineering, supplemented by three to five (3 to 5) years of engineering experience in structural design.
Licensed Professional Engineer (P.E.)