

# Bridge Engineering and Inspection

For more than 25 years, the experienced, award-winning bridge engineers and designers at GAI Consultants has been designing, inspecting, and rehabilitating bridge structures. Our understanding of safety standards, construction processes, and material and workmanship practices results in long-term returns on infrastructure investments.

**Experienced bridge design engineers and certified bridge inspectors mean long-term solutions with an eye on cost.**

The skill GAI brings to bridge design projects for all types of steel, concrete, and timber structures is evident in our long list of project successes. From minor stream crossings and pedestrian overpasses to major river spans, highway interchanges, and grade separations, we incorporate the latest design techniques and philosophies into every design effort, including Load and Resistance Factor Design.

GAI's transportation engineers and designers build cost-saving features into each set of plans. We incorporate standards for constructible details and provisions for minimal future maintenance. And GAI keeps an eye on project delivery costs so our transportation clients can continue to build and maintain a solid transportation network.

Inspecting a bridge is a complex assignment that requires skill and experience. GAI's certified bridge inspectors identify conditions that may impair safe operation or useful life expectancy, and recommend repairs. Having conducted hundreds of inspections on all types of bridges from 20'- to 1,000'-span structures, GAI solves structural problems economically using insight and innovation to recommend rehabilitation over replacement.

Each bridge rehabilitation project is unique, and GAI's complete venue of in-house capabilities provides all the necessary support services for our engineers and technicians to evaluate conditions, determine cause, and design repairs. We upgrade



## Service Profile



load capacity and incorporate cost-effective features in our designs—fatigue-prone detail retrofits, member strengthening, deck joint elimination, drainage improvements, scour protection, earthwork retrofits, composite construction, and lightweight concrete.

Stream and river crossings have the potential for disaster when scour undercuts the supporting structure. GAI's expertise in hydraulics and scour analysis supports new and rehabilitated structures. We evaluate scour potential and design foundations and protection systems that minimize possible damage.

Whether rehab or new construction, GAI's reliable in-house construction inspection services draw from a pool of seasoned engineers and technicians. Our pre- and post-construction services include construction engineering and inspection, contract administration, and construction monitoring and management.

GAI delivers premier solutions for designing, inspecting, and monitoring the bridges that support highways, railways, busways, pedestrian walkways, and industrial heavy hauling systems.

### Bridge Engineering and Inspection Services

- Simple and continuous span bridge design
- Horizontally curved girder modeling and design
- Thru and deck truss bridge design
- Culvert and drainage design
- Hydrologic and Hydraulic (H&H) analyses
- Certified bridge and structure inspections
- Historic bridge restoration techniques
- Bridge rehabilitation inspection and design
- Scour analysis and scour protection design
- Earthquake and fatigue-prone detail retrofitting, and member strengthening
- Load capacity determinations and useful life expectancy estimates
- Geotechnical engineering and foundation design
- Environmental studies and cultural resources
- Design build delivery systems

### GAI Services Summary

- Airport Planning and Design
- Bridge and Structure Inspection and Design
- Coal Combustion Residuals Management
- Construction Inspection and Management
- Cultural Resources Management
- Economic Analyses and Strategies
- Electric Transmission Design and Siting
- Environmental Engineering
- Environmental Studies, Species Studies, Permitting
- Gas Pipeline Surveying and Mapping
- Geographic Information Systems (GIS)
- Geotechnical Engineering and Geology
- Impoundment and Landfill Permitting and Design
- Land Development Engineering
- Landscape Architecture and Design
- Master Planning and Urban Design
- Mechanical, Electrical, Structural Engineering
- Natural Gas FERC Certification and Permitting
- Nuclear Energy Engineering Support
- Right of Way and Appraisal Support
- Land Surveying and Mapping
- Transportation Planning and Design
- Utility Management Consulting
- Water, Stormwater, Wastewater Management

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