

Seismic Investigation and Stress Analysis

Specialized engineers at GAI conduct seismic analysis and develop designs for steel and concrete buildings, foundations, bridges, retaining walls, dams and impoundments, piping, and other structural systems and components. Our structural and geotechnical engineers, and geologists routinely design structures that support vibratory or impact loadings, evaluate liquefaction susceptibility, and are experienced in evaluating site-specific seismic risk and ground motion parameters.

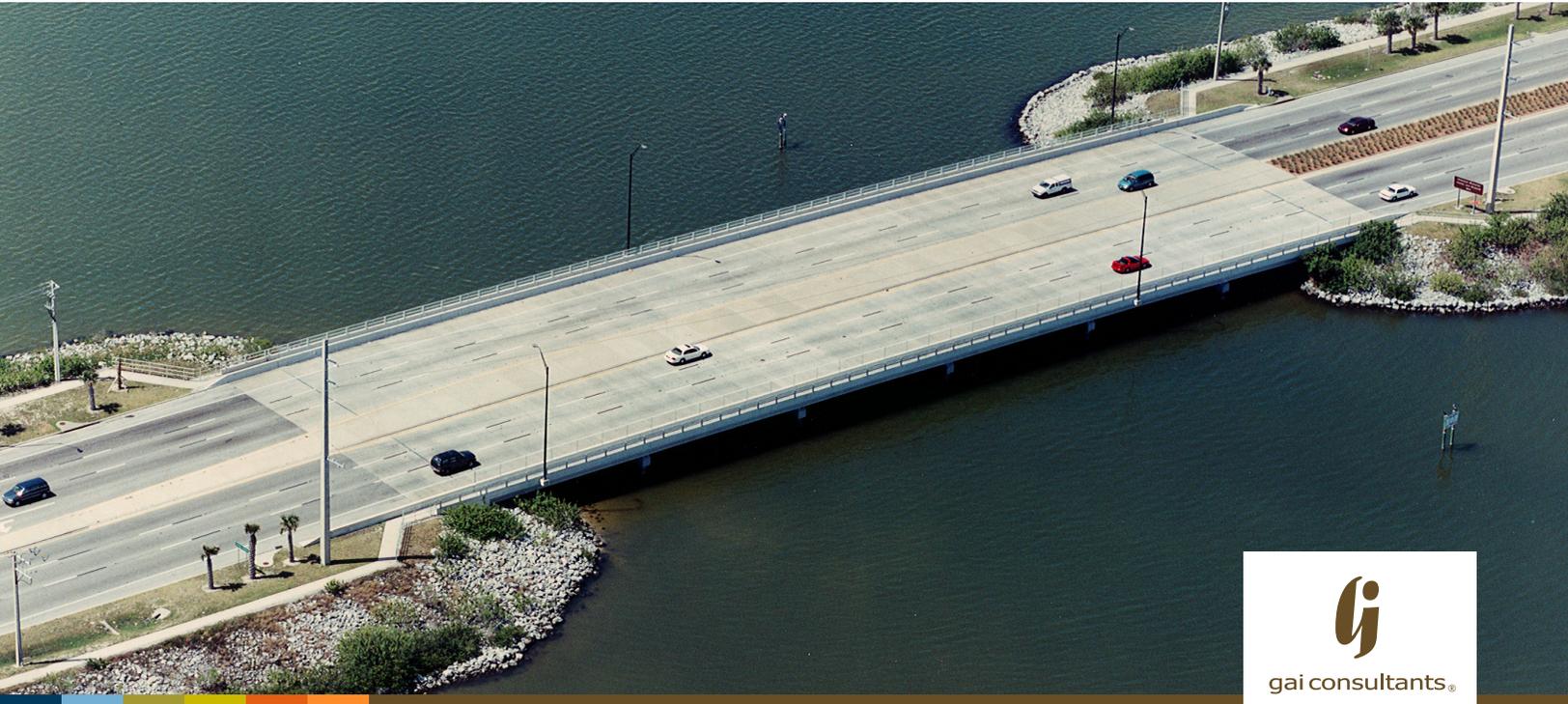
Skilled engineers and demonstrated modeling techniques means a cost-effective approach to analyzing need and designing solutions that fit.

With a thorough understanding of major design codes for seismicity, seismic loading, dynamic analyses techniques, and computer codes, GAI develops seismic input, designs structures that support vibratory or impact loadings, and facility

structures that resist blast loadings. The engineering expertise of our professionals that contributes to this design process includes structural dynamics and the vibration theory, geotechnical engineering and soil dynamics, structural design, computer coding, and in-depth knowledge of soil-structure interaction.

GAI has engineering professionals that specialize in nonlinear dynamic modeling and that provides a cost-effective approach to analyzing and designing chemical manufacturing facility structures that resist blast loadings. We also develop mitigation designs for liquefaction resistance, noise and vibration problems using empirical and theoretical models, and provide field measurement and monitoring services.

Clients benefit from GAI's detailed knowledge of the theories, algorithms, and assumptions behind special- and general-purpose finite element computer programs, because we can select the appropriate model that fits each client's specific need and develop a practical solution. Our experience in applying numerical techniques to



gai consultants®

Service Profile



solve continuum mechanics problems involves stress analysis, heat transfer, soil and rock mechanics, post-earthquake slope stability, and groundwater flow problems.

GAI uses these techniques effectively for structure design and structural remediation projects as well as for failure analyses.

GAI investigates structure failures to determine the cause, performs theoretical and experimental stress analyses, and evaluates the effects of wind, water, soils, ice or temperature loads on structures. Our professionals also analyze structures and foundations subject to vibrations and construction loads.

GAI has been inspecting structures for more than 50 years and our experience includes inspecting and documenting the condition of concrete, steel, timber, and masonry structures. Our inspections include underwater structures and tall structures. In addition, HAZWOPER-trained personnel conduct structural inspections at hazardous waste sites.

Using models to cost-effectively analyze and design structures, and applying numerical techniques to solve continuum mechanics problems, GAI produces designs for structural and geotechnical remediation, and failure analyses that work for our clients.

Seismic Investigation and Stress Analysis Services

- Seismicity and seismic input
- Vibration and seismic analyses
- Noise and vibration problem mitigation
- Load and stress determinations
- Failure investigations
- Theoretical and experimental stress analyses
- Liquefaction and post-earthquake slope stability
- Analysis and simulation software development
- Continuum mechanics problem numeric solution
- Instrumentation and on-site testing
- Field measuring and monitoring

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

The scope of professional services that are provided by or offered out of each GAI office including, but not limited to, engineering and surveying services, is governed by the professional and business licensing requirements of each individual State or jurisdiction in which the GAI office is located and whether GAI has the requisite professional and business licenses for that State or jurisdiction. Nothing on GAI's Web Site or marketing materials is intended to be interpreted or construed as offering to perform professional licensed services where prohibited unless the licensing requirements have been met. Engineering services are not offered out of GAI's Northern Kentucky (Florence) office location. Surveying services are not offered out of GAI's Illinois location or by our New York subsidiary.

