BRIDGE ENGINEERING SERVICES

CAPABILITIES STATEMENT

Fickett Structural Solutions, Inc., is a certified Small Business Enterprise specializing in **structural engineering** of bridges, culverts, highway ancillary structures, and hydraulic steel structures, as well as **hydraulic evaluations** of bridges and culverts. We support private, local, state, and federal agencies nationwide. Our licensed Professional Engineers possess broad experience with various bridge types and materials and have the depth of expertise to offer practical engineering insights for design, maintenance, rehabilitation, and asset management planning.

Structural Engineering

Load Ratings - Fickett performs load rating analyses in accordance with state-specific standards and the AASHTO Manual for Bridge Evaluation, covering legal and permit loads, as well as client-specific overweight vehicles. Our team rates structures from culverts to trusses, helping agencies make data-driven posting and rehabilitation decisions. Our engineers have delivered inventory, rehabilitation, overload, and damage analyses for agencies in WA, OR, AK, TX, OK, and WI.

Bridge Design - We provide practical, cost-effective bridge designs in full compliance with the AASHTO LRFD Bridge Design Specifications and state-specific standards. Our engineers emphasize responsive service and direct client engagement, delivering solutions that balance budget and performance goals. With proven experience in prestressed concrete, steel, and timber bridge design, we have successfully served clients in WA, OR, OK, and AK.

Bridge Rehabilitation and Repair - Fickett delivers rehabilitation and partial replacement bridge designs, detailed repair plans, and preservation strategies customized to project schedules, budgets, and long-term service goals. Covering all structural materials, including FRP applications, we provide solutions from guardrails to foundations. Our work helps owners maintain safe operations, meet compliance standards, and maximize the value of maintenance investments.

Software and Analysis - Fickett's engineers are proficient in advanced modeling and analysis methods, including finite element modeling, nonlinear and seismic displacement-based design, pushover analysis, and fracture critical modeling. We employ a wide range of tools, including GTSTRUDL, SAP2000, RISA, PG Super, BRASS, LEAP CONSPAN, and DFSAP, as well as both state-developed and in-house spreadsheets. Our analyses apply Allowable Stress, Load Factor, and Load and Resistance Factor Methods, following state-specific standards, AASHTO Standard Specifications for Highway Bridges, AASHTO LRFD Bridge Design Specifications, and the Manual for Bridge Evaluation (MBE).

Hydraulic Evaluation

Fickett provides specialized expertise in assessing and managing bridges that cross waterways, focusing on river dynamics, stream stability, flooding, scour, and other hydraulic processes that influence structural performance. Our team combines advanced field data collection, GIS-based mapping, and numerical modeling to deliver technically sound, defensible solutions that enhance bridge safety, regulatory compliance, and resilience.

Our engineers perform detailed field inspections and stream stability assessments to evaluate existing hydraulic conditions, bank stability, and scour exposure, reducing risks associated with channel instability and erosion. Using tools such as HEC-HMS, HEC-RAS (1D/2D), and SWMM, Fickett develops comprehensive hydrologic and hydraulic models to characterize watershed behavior, predict flow conditions, and support floodplain, conveyance, and scour analyses.

We also conduct detailed scour evaluations and design mitigation strategies that protect bridge foundations and extend service life. Following FHWA HEC-18, HEC-20, and HEC-23 guidance, our engineers assess structure–stream interactions using field survey data, sediment characterization, and hydraulic modeling outputs to quantify potential scour and inform Scour Plans of Action (POA). By integrating these technical evaluations with practical design solutions, Fickett helps clients implement cost-effective, resilient, and compliant measures that safeguard critical infrastructure against hydraulic forces.

Contact

Corporate Headquarters
8383 Greenway Blvd
STE 220
Middleton, WI 53562
6008.831.3238

Milwaukee, WI
4811 South 76th Street
STE 414
Greenfield, WI 53220
608.831.3238

Nashville, TN
220 Great Circle Rd
Unit 120
Nashville, TN 37228
608.831.3238

Olympia, WA
2840 Crites St. SW
STE 108
Tumwater, WA 98512
360.214.5759

Portland, OR
225 SW Broadway
STE 301
Portland, OR 97205
608.831.3238

fickettinc.com