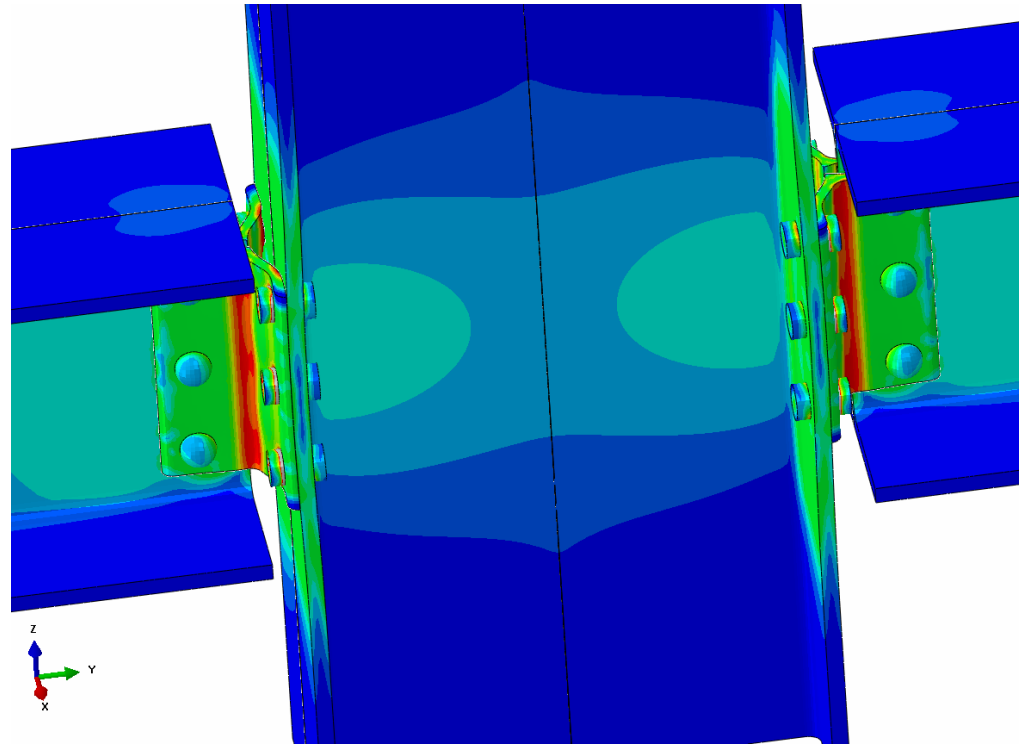


# Nonlinear Finite Element Analysis

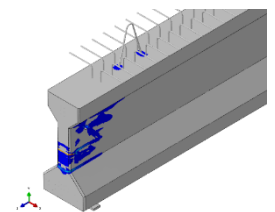
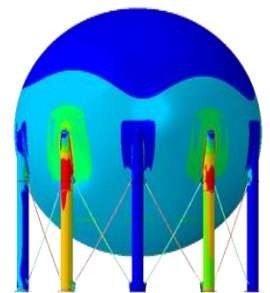


## PRACTICE AREAS

- Plasticity and other material nonlinearity
- Fracture mechanics, crack propagation and material failure
- Geometric nonlinearity and buckling
- Vibration
- Explicit dynamics, impact, and blast
- Complex multi-body assemblies with contact
- Thermomechanical response
- Hydraulically actuated systems
- Reinforced concrete
- Granular materials
- Peer review

Having investigated and consulted on hundreds of structures and pressurized equipment components, WJE professionals are experienced providers of specialty nonlinear finite element modeling services for all types of new and existing solid components. WJE leverages recognized industry techniques, advanced academic preparation, and years of experience to provide rapid assessment and actionable, cost-effective solutions for challenging new designs, existing infrastructure, and unexpected failures.

Clients seek nonlinear finite element analysis to provide predictions for complex systems where traditional engineering methods are not well-suited, large numbers of tests are impractical, and/or sensor access is limited. At WJE, most analyses are conducted with the commercial software program Abaqus; however, WJE maintains several other programs that are built for specific applications. WJE utilizes the latest hardware and draws on years of experience to minimize model run-times and to achieve the right level of analysis sophistication for our clients' needs. In addition to quantitative capabilities, WJE emphasizes strong mechanical qualitative reasoning among our analysts, who work closely with laboratory and field instrumentation engineers to provide holistic solutions.



WJE primarily focuses on structures and pressure-containing equipment such as bridges, cranes, buildings, pipelines, piping, tanks, pressure vessels, railroads, pavement, foundations, offshore structures, and mechanical equipment. WJE maintains the most up-to-date knowledge in modeling techniques for metals, elastomers, granular materials, and reinforced concrete and offers independent, third-party reviews.