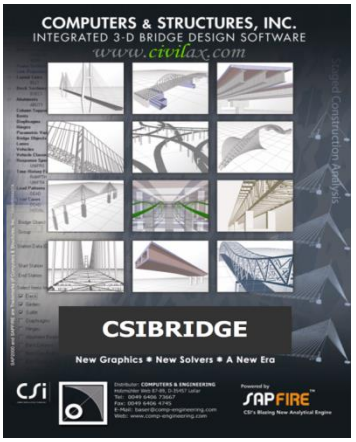
CSI bridge

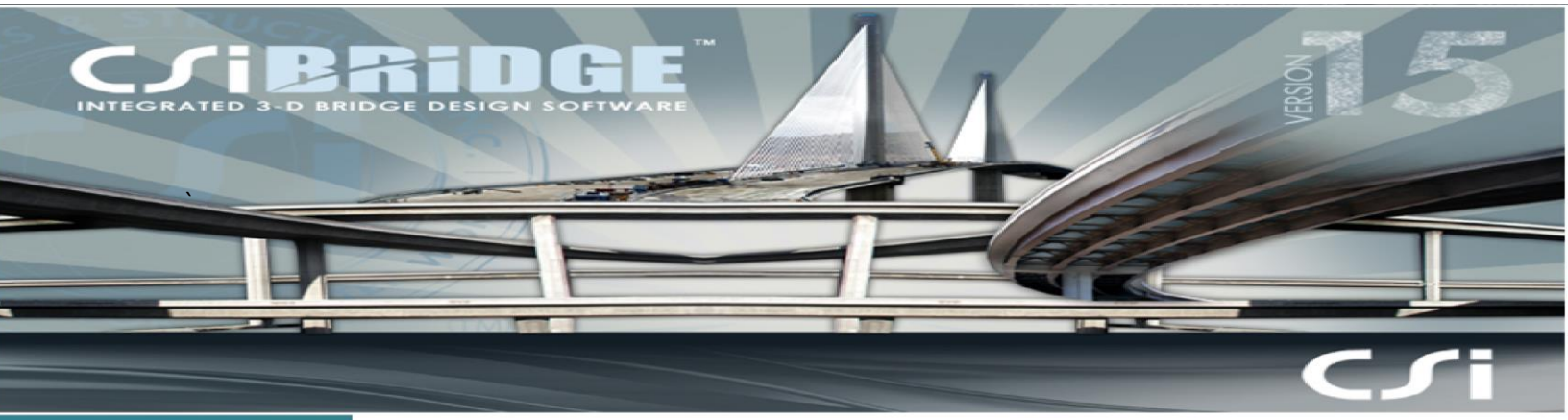


Modeling, analysis and design of bridge structures have been integrated into CSi Bridge to create the ultimate in computerized engineering tools. The ease with which all of these tasks can be accomplished makes CSi Bridge the most versatile and productive software program available on the market today.

Using CSi Bridge, engineers can easily define complex bridge geometries, boundary conditions and load cases. The bridge models are defined parametrically, using terms that are familiar to bridge engineers such as layout lines, spans, bearings, abutments, bents, hinges and post-tensioning. The software creates spine, shell or solid object models that update automatically as the bridge definition parameters are changed.

Training courses :

course	Duration hrs
CSI bridge Basic	24
CSI bridge Advanced	24

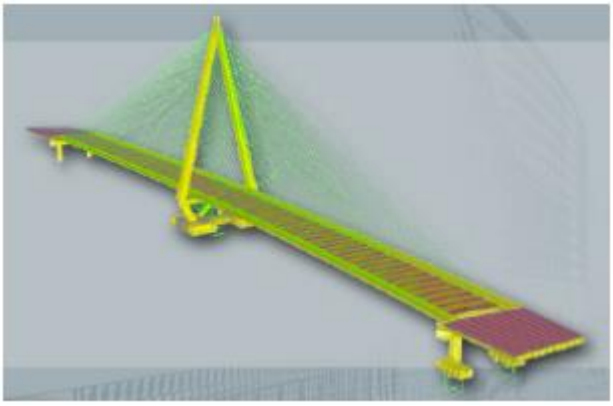


Course outline :

- Modeling of Bridge Systems
- Loading and Analysis
- Design and Output
- CSiBridge Tutorials
- CSiBridge Test Problems

Modeling of Bridge Systems

CSiBridge implements a parametric object-based modeling approach when developing analytical bridge systems. This enables designers to assign bridge composition as an assembly of objects (roadway superstructure, substructure, abutments, piers, foundation system, etc.) before the SAPFire ® Analysis Engine, integral to CSI Software, automatically transfers the object-based model into a mathematical finite-element model by meshing the material domain and assigning material properties. This object-oriented approach simplifies and expedites the modeling process, saving engineers the need to directly define, link, constrain, and mesh all material volumes.



CSiBridge also allows engineers to import model data from Dwg/Dxf, IGES, CIS/2 STEP, and Land XML file formats, or export to PERFORM-3D, MS Access, and CIS/2 STEP, all following IFC standards.

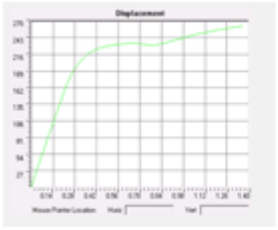
Loading and Analysis

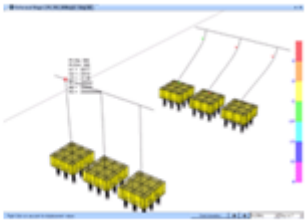
After modeling, CSiBridge provides options for the assignment of load cases and combinations. Vehicle, seismic, and wind loading are generated according to building code (AASHTO LRFD, Canadian, etc.) and assigned according to model geometry. A series of templates for assigning and enveloping load conditions make CSiBridge intuitive and practical.

After the original object-based model has been translated into a finite-element model and subjected to load cases and combinations, the analysis process follows directly.

Analysis capabilities go well beyond elastic performance into the assessment of inelastic behaviors. Geometric and material nonlinearities provide insight into strength, ductility, and other performance measures critical to response under extreme loading. Static-pushover and dynamic analyses (steady-state, response-spectrum, and time-history) provide further insight into earthquake resilience. Substructure hinging properties are customizable.

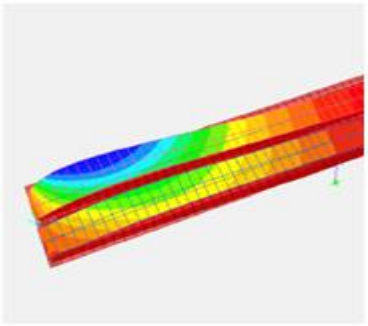
Additional analysis features may account for creep and shrinkage behavior, post-tensioning with optional automatic cable tensioning, staged-construction effects inherent to segmental construction, buckling, camber and shape finding.





Design and Output

An automatic design process couples with analysis procedures to coordinate and optimize the resizing of bridge components. For reinforced-concrete systems, CSiBridge optimizes rebar sizing through a comparable procedure.



Customizable reports present analysis and design details in a variety of formats. Moment, shear, and axial response data and diagrams in 2D and 3D views, seismic-displacement capacity, demand-capacity ratio, load rating per classification, influence-surface plots for displacement, reaction, and frame, shell, solid, or link response are all options for output generation.