

Staged construction

Staged construction is a static modeling, analysis, and design application which enables the definition of a sequence of construction stages in which structural systems and [load patterns](#) are added or removed, and time-dependent behaviors are evaluated, including [creep](#), [shrink age](#), aging (change in elastic modulus with age), and [tendon relaxation](#). Material and geometric [nonlinearity](#) may be applied to staged construction. Further, staged construction may be part of a sequence of nonlinear static or direct-integration [time-history analysis load cases](#). For linear load cases, the structural stiffness at a given construction stage may serve as the basis for analysis.

Staged construction is available in select program levels. Please refer to the Compare Levels page for the product you are working with. Additional details, including specifics on input parameters, are described in the [CSI Analysis Reference Manual](#) (Staged Construction, page 396).



[1]

Articles

Tutorials

Title	Description	Program
Analysis and design of composite steel-girder bridge	Use CSiBridge to model a composite steel-girder bridge based on that from the LRFD Design Example, Steel Girder Superstructure Bridge (FHWA NHI-04-041).	CSiBridge
Cable-stayed bridge	Tutorial included in the SAP2000 bridge-examples document.	SAP2000
Obtain results for individual stages of a staged-construction load case	Options and an example of how to obtain results for individual stages of a staged-construction load case.	SAP2000

Test Problems

Title	Description	Program
Bridge shrinkage example	Evaluate shrinkage for a one-span and a continuous two-span bridge system.	CSiBridge
Staged construction in buildings	Guidelines for setting up staged construction and interpreting the staged-construction results.	SAP2000
Staged construction of a five-story column	Creep application, addition of nodes to deformed configuration, and verification against manual calculations are given for the staged construction of a five-story column.	SAP2000
Staged-construction analysis of two-span precast-girder bridge	Modeling and construction stage analysis of precast-girder bridge which is simply supported for dead load and continuous for live load.	CSiBridge
Two-span girder simply-supported for DL and continuous for LL	Modeling demonstration for a two-span girder which is simply-supported for DL and continuous for LL.	SAP2000

Attribution

- [1] Photo by State Records NSW, 1923 - Retrieved from [Flickr](#) under [Creative Commons, CC BY 2.0](#) licensing