Cable-stayed bridge first steps

Tutorial

Name:	Cable-stayed bridge modeling
Description:	Basic guidelines for modeling of cable-stayed bridges.
Program:	CSiBridge
Version:	all
Model ID:	na

Load Assignment

The proper assignment of loads would depend on the actual sequence of loading and on the various load combinations that you need to evaluate. A simple example for illustration:

Let's say that you need to check a cable-stayed bridge for wind loading (static analysis) and for human induced vibrations (time history analysis). Then you could proceed as follows:

- Create a nonlinear static load case (say "A") to analyze the structure for dead loads and possibly also for cable tensioning. This may require adjust ing the initial geometry in order to get the desired final geometry, which could be done by "Analyze > Modify Undeformed Geometry" menu command (alternatively, you could use staged construction analysis to simulate the actual erection sequence for the bridge - please see Watch & Learn Video Staged Analysis for additional details on this subject).
- To analyze the structure for wind loads, create a nonlinear static load case in which the wind loads will be applied. This wind load case should be using stiffness at the end of load case "A".
- To analyze the structure for human-induced vibrations, create a time history load case in which the time-variable loading will be applied. This "human-induced vibrations" time history load case should be using stiffness at the end of load case "A". If modal time history is used, the modes should be again based on stiffness at the end of load case "A".
- Other load cases, for earth pressure, moving loads, etc. would be defined similarly, i.e. using stiffness at the end of load case "A".

See Also

- Accounting for deformed shape in staged construction article
- Initial cable forces for a cable-stayed bridge article
- Cable-stayed bridge FAQ article