Cable-stayed bridge FAQ

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How are local cable modes eliminated during the modal analysis of a cable-stayed bridge?

Answer: Local cable modes may be eliminated through one of the following methods:

1. Define cables using only one segment such that cable mass distributes only to each start and end node, preventing the excitation of local cable vibration.
2. Define cables using multiple segments, but assign massless properties to each cable by either changing the mass of the cable material to zero, or by specifying zero mass modifiers to each cable through Advanced > Assign > More > Cable > Material Property Overwrites. Note that total mass will be slightly underestimated using this approach.
3. Run a modal analysis based on Ritz vectors, rather than Eigenvectors. This will excite only the global modes of the structure.

How is moving-load analysis properly applied to a cable-stayed bridge?

Answer: When subjecting a cable-stayed bridge to moving-load analysis, stiffness at the end of the dead load case should be used.

See Also

- Accounting for deformed shape in staged construction article

- Cable-stayed bridge first steps tutorial

- Initial cable forces for a cable-stayed bridge article