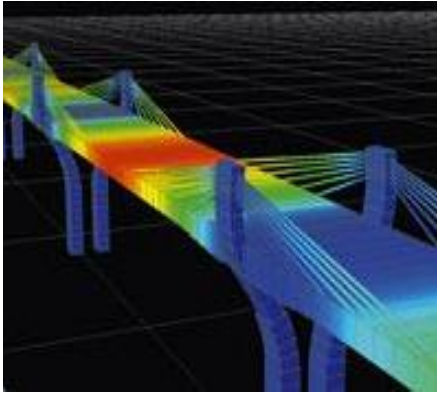


# Calibrate Finite Element Models

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STRAAM Group



## 'Raising the bar' by calibrating Finite Element Models

Finite Element models provide a clear graphic picture of a design of a bridge. But how accurate is the FE model? In reality, the modeler needs to make dozens of assumptions regarding material properties, soil conditions and many other factors as they build the FE model. Even with a just 10% error in each parameter that is estimated, the cumulative effect could yield inaccuracies of 2 or 3 times the structures overall measured response.

*Professional challenge* - As professionals, we all strive to balance cost with the needs of the project. Historically, doing an elaborate testing program was not practical and we relied on professional judgment to craft an acceptable FE model. *But now technology has improved* to allow all professionals to check their work through measurements at a reasonable cost.

*Get it right* – STRAAM Group has developed a rapid method for capturing the dynamic response of bridges and techniques for quickly calibrating a FE model. The measurements provide a check to assure your model reflects the bridge's real response.

- ❖ Quickly measure the frequencies of resonance, mode shape and non-linear damping.
- ❖ Use the accurate measurements to calibrate the FE model to achieve better than 90 % of the measured dynamic response.
- ❖ Calibrated model and measurements used for load rating and capacity assessment.
- ❖ Establish the baseline condition of the bridge's for future comparison to detect damage.
- ❖ Minimize or eliminate the need for lane closures by measuring from the side of bridge.

STRAAM Group provides a complete and cost effective service by providing equipment, expertise and professional staff to take the measurements, process the data and help calibrate the model efficiently and accurately. Calibrated models allow Engineers to be assured they are providing accurate results to their customers.

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