



Strainstall is fully equipped to undertake dynamic response testing of structures, using equipment that can be set up on site very quickly.

With bridge structures, engineers usually want to measure displacement and vibration (acceleration) responses to known live loadings, in order that numerical models can be verified. The key parameters that are determined are displacements, frequencies of response and damping coefficients.

The basic configuration includes linear displacement transducers and optional accelerometers which are fitted to telescopic poles. They are raised to the soffit from ground level, up to a maximum height of around 9m, and pushed into firm contact with the bridge. Other sensors, including strain gauges, can be incorporated, but may need special access arrangements for installation.

The sensors are connected to a high speed data acquisition system, that captures data at a rate sufficient to enable the full dynamic characteristics to be measured. The Strainstall engineers who operate the equipment are able to carry out analysis on the data as testing proceeds, to confirm key parameters and system functionality.

With rail bridge tests in particular, it is important to record the train details such that the loading patterns can be correctly interpreted. The site teams are skilled in train identification, however, a video camera is often used to record the train events.

Examples include:

Over 80 bridge resonance tests for the West Coast Route Modernisation project, from initial studies to verification tests involving the C390 test trains.

Motorway underbridge deflection measurements to assist in determination of a safe method for welding as part of a strengthening scheme.

Deflection measurements to assist in structural assessment (CTRL scheme).

Strainstall's team of experienced engineers operate from offices in Cowes, Bath and Aberdeen (UK), Norway, Belgium, USA and Dubai.



The World of Load
Measurement and
Stress Analysis

Instrumentation Used

- Linear Displacement Transducers
- Accelerometers
- Strain Gauges
- Displacement Transducers and Accelerometers Fitted to Head of Telescopic Pole
- Multi-channel High Speed Data Acquisition System

Site Procedures Include:

- Rapid Installation and Set-up of System
- Data Analysis as Trials Proceed
- Full Record of Live Loading Events

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