



Structural Signature

PROBLEM

For a newly built bridge or bridges with less than 50 years of age, no rapid and economical Non-destructive Evaluation (NDE) techniques other than visual inspection are applied to determine the real status of them in their lifecycle. The need exists to develop effective diagnosis tools for early detection of construction faults, defects, crack growth and deterioration processes during inspection, to keep the bridge infrastructure at an acceptable level, from structural safety and economic viewpoints.

DECISION

Bridge operational safety and performance evaluation to extend the life of the bridge based on getting true starting point of a newly built bridge or determining performance of critical components of less than 50-year-old bridges.

MEASUREMENT

Periodic snapshot of deflection of bridge critical elements, using our patented deflection instrument, LDI, creates bridges' structural signature that is archived in **IntelliStruct**. Compliments the two-year visual inspection with a digital measured performance indicator compared over time. Signature can support a preliminary live load test for preliminary load rating.

ANALYTICS

A deflection profile of bridge critical elements is created under specific loading scenarios. The signature is reproduced on a 2-year inspection cycle or after an event like floods, earthquakes, fire or an overweight vehicle permit. Overlay of different bridge structural signatures can measure the amount and rate of crack growth and structural deterioration.

BENEFITS

Predictive performance supports safer operation and avoids accidents or bridge failure. Allows for predictive maintenance cycles and extended bridge life cycle.

BEST PRACTICES

China, Japan, Europe and USA are reviewing more advance methods to measure bridge performance levels. Structural deflection is a key factor in this evaluation and can be measured and tracked using Structural Signature.