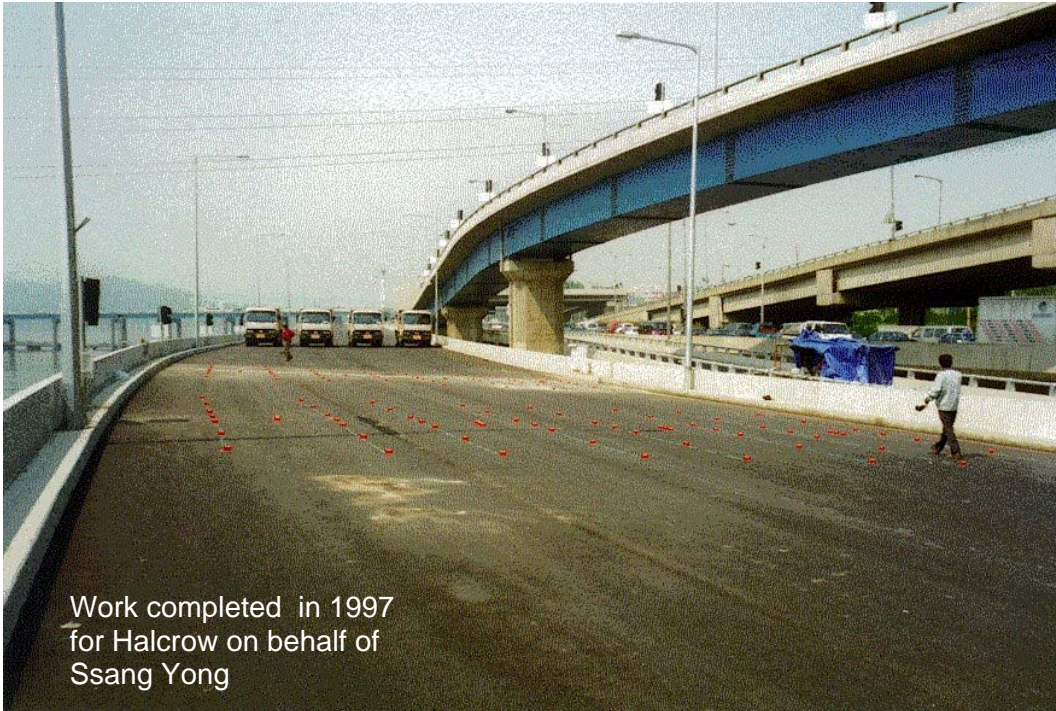


## Dynamic Load Testing using DART



Riverside North Viaduct is a newly constructed externally post tensioned, precast concrete, glued segmental structure in Seoul, South Korea. The 4km long viaduct has spans of around 50m.

Prior to opening to traffic, the bridge owner required verification of the deck design, particularly the cantilever section, by load testing.

One span was selected for testing and sensors installed at mid and end span positions. Four vehicles of gross laden weights around 32 tonnes were used in various configurations including parallel running at speed. Ramps were placed across the vehicle paths for some tests.

Post processing of the data was completed using nCode software.

A comprehensive report gives the test results in graphical form with numerical values of maxima etc. tabulated for comparison with the engineering design calculations. The key results were:

- Maximum and minimum strains and deflections under various defined static live load conditions.
- Strains and deflections and frequencies/ modes of vibration under moving vehicles at various speeds and under braking.
- Dominant frequencies of response during ramping tests.

Strains and deflections measured during the static and dynamic tests were found to be independent of vehicle speed. The ramping tests identified the dominant frequencies and demonstrated a loading condition where resonance was occurring.

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



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### Instrumentation used:

- Surface strain sensors
- Vertical deflection sensors
- Accelerometers
- SES "Data Analysis in Real Time" (DART) fast multi-channel data acquisition system

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