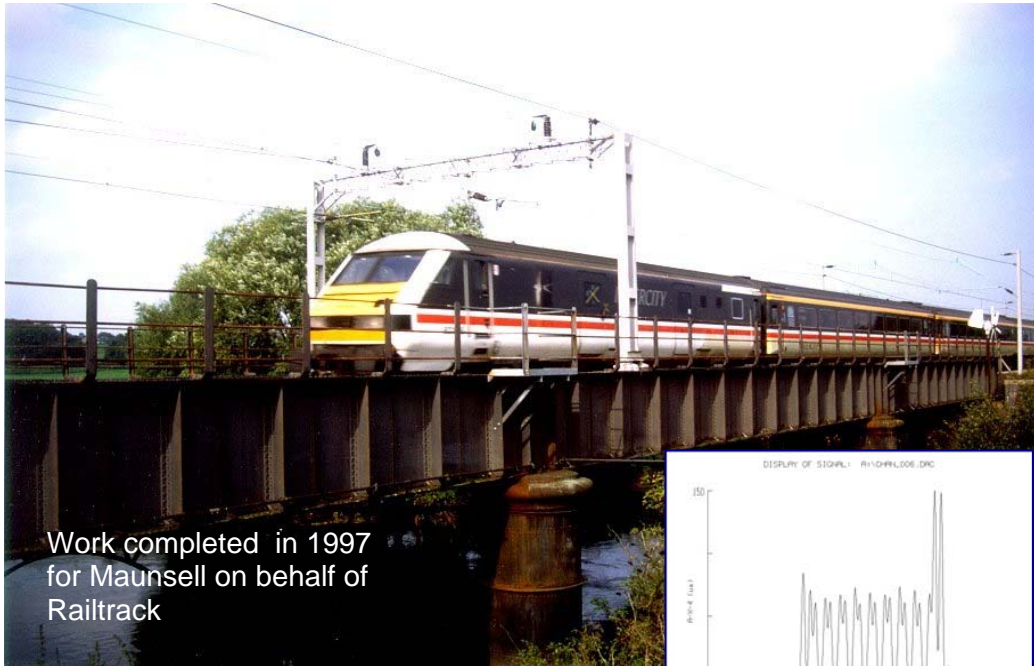
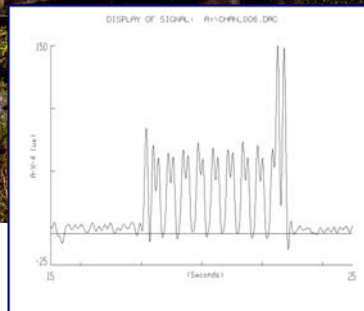


Dynamic Load Testing using DART



Work completed in 1997
for Maunsell on behalf of
Railtrack

Typical Cross Beam Strain
Time-History Plot for
Passenger Train at 99mph
(as photo)



Underbridge 86, dating from 1890, carries the West Coast Main Line over the River Tame in Staffordshire. The three span steel/ wrought iron structure comprises three longitudinal riveted girders with cross beams supporting the trackbed. The cross beams have brick jack arches, concrete arches or steel plate between them.

Maunsell completed an assessment and found some members to be overstressed with freight traffic or trains at the 110mph line speed, despite no evidence of structural distress:

- Bottom flange of cross beams
- Bottom flange of main girder at curtailments of built-up plate.

Short-term options for the Client were to reduce the line speed (at cost penalty) or to refine the assessment through monitoring.

STRAININSTALL installed strain and deflection sensors at these positions and used the DART system to monitor the effects due to some 65 trains, including freight and passenger traffic. Maunsell measured and recorded train speeds and details.

STRAINSTALL's report gives the test results in graphical form with numerical values of max/min stress tabulated for direct comparison with the assessment calculations.

The key results were:

- Maximum and minimum deflections and live load stresses.
- Confirmation that worst case loading was under freight traffic.
- Full range of data for different train speeds enabling comparison with dynamic load factors from assessment codes.

STRAINSTALL mobilised within one week and completed the tests over a two day period. The cost to the Client was considerably less than the daily charge for imposing line speed restrictions at the site.

Strainstall's team of experienced engineers operate from offices in Cowes, Bath and Aberdeen (UK) and Tønsberg (Norway). For further information, please contact:

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The World of **Load Measurement and Stress Analysis**