

## Instrumentation

# In-Situ Stress Measurement in Concrete

Two techniques have been devised to measure the in-situ stress in reinforced and pre-stressed concrete members; both techniques involve instrumenting the concrete surface prior to the release of local stresses either by coring or saw cutting. Measurement of the consequent strain changes in conjunction with knowledge of the elastic modulus of the concrete yields a measure of the in-situ stress.

### Method 1

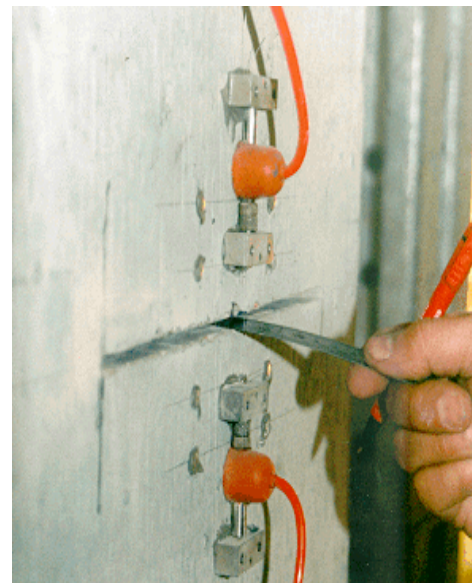
A combination of vibrating wire strain gauges and Demec studs provides three independent measures of the strain changes in each of four directions. This arrangement has in-built self checking yielding greater confidence in the results. Modulus is measured using a jacking technique or can be conducted later on the recovered core. Analysis of the data yields the two principal stresses and their directions.

### Method 2

A saw cut into the concrete releases stress in a preplanned direction. Instrumentation comprises sets of vibrating wire gauges and Demec studs.



*Method 1*



*Method 2*