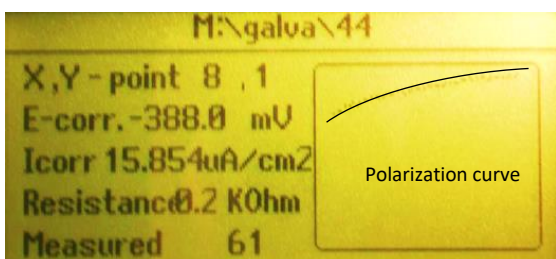


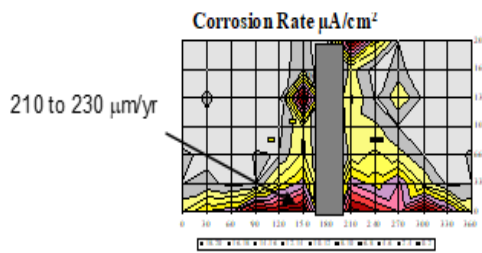
## Case 2.2 Corrosion rate, Electrical resistance and Potentials for corrosion evaluation with GalvaPulse, Denmark



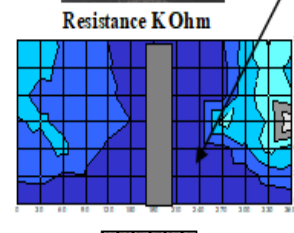
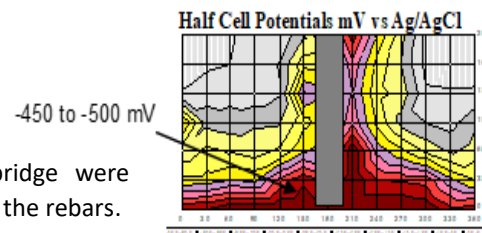
Highway bridge with deteriorating columns at the footings



$i_{corr} = 15.9 \mu A/cm^2$   
or  $\approx 190 \mu m/year$



0 to 2 kOhm



The columns of a 30 year old highway bridge were investigated at the lower parts for corrosion of the rebars.

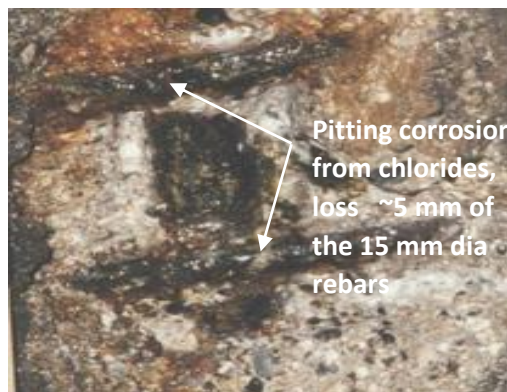
The GalvaPulse was used for half-cell potentials, corrosion rate and electrical resistance of the cover layer.

Above is shown the GalvaPulse electrode and computer with signal box and one readout for illustration.

The Ag/AgCl potential is -388 mV and the electrical resistance 0.2 kOhm, indicating high corrosion risk and a moist cover layer, probably contaminated by chlorides. The polarization curve is regular and the corrosion current, calculated from this curve,  $15.9 \mu A/cm^2$ , equivalent to a loss of steel, following Faradays Law, of  $190 \mu m/year$ ,  $\sim 0.2 mm/year$ , very active corrosion.

The amount of chlorides measured by the RCT was 0.9%/mass at the footings.

Opening



Pitting corrosion from chlorides, loss  $\sim 5 mm$  of the 15 mm dia rebars