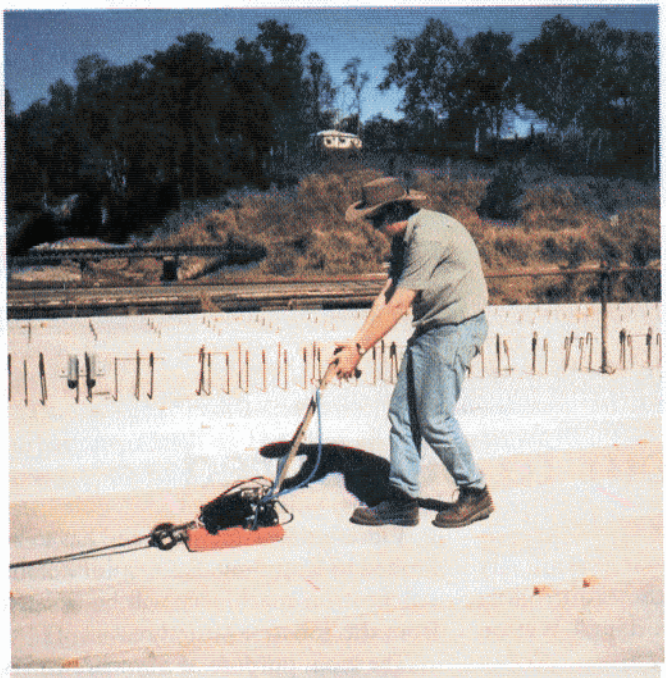
# Detecting defects in concrete

Ground penetrating radar (GPR) has been used to detect defective prestressed concrete bridge deck beams on the Cattle Creek Bridge in Mackay, North Queensland. according to the CRC for Construction Innovation.

GPR is an imaging technology using electromagnetic waves with frequencies typically ranging from 25MHz to 2GHz to obtain information on the structure of hidden subsurfaces.

The latest generation high-frequency GPR unit was used to investigate the bridge deck by consultant Georadar Research. The aim was to obtain accurate images of any internal defects in the beams to within 5mm. According to the



This ground penetrating radar unit was used to detect defects in prestressed concrete deck beams on Cattle Creek Bridge in Mackay.

project report, the new high-frequency units achieve this accuracy, overcoming the problem of blurry images commonly associated with older GPR units.

GPR enabled defective sections of beams to be repaired insitu saving about 50% of the cost of the traditional alternative of replacing each defective beam, according to the report.

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Project participants included the Queensland Department of Main Roads, head contractor Abigroup and consultant Georadar Research Pty Ltd. The work involved repairing the beams by cutting narrow slits in their undersides and pumping grout into selected locations.

GPR was introduced to Australia by Georadar in 1984 and has since been used in mining, civil engineering, geology, archaeology, telecommunications and gas and water utilities.

The new GPR unit has also been applied to examine scouring from debris hitting the bridge during past floods. ■