

A construction worker wearing a yellow hard hat, sunglasses, and a high-visibility safety vest is operating a SmartCart GPR unit on a concrete bridge deck. The unit is a hand-pushed cart with four wheels and a control panel on top. The background shows a construction site with rebar and concrete structures.

BRIDGE DECK EVALUATION

Case Study



Noggin 1000 SmartCart survey

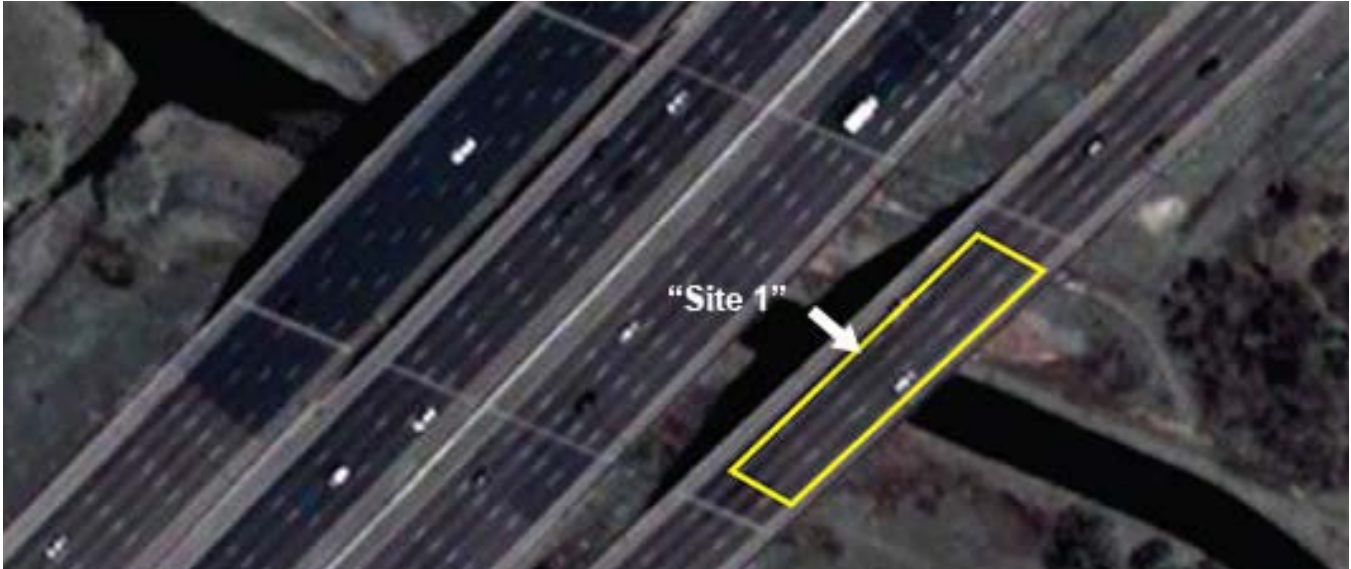
Monitoring the state of bridge decks is an ongoing need to evaluate deterioration. Corrosion of reinforcing steel and delamination of asphalt and concrete can be sensed with GPR. This example illustrates an area of chemical alteration in a bridge-deck. Deterioration is indicated by changes in signal amplitude.

Bridge decks require regular inspection.

GPR has proven to be a very effective method of non-destructively evaluating degradation and delamination. The ASTM # D6087 standard describes the principles for using GPR for this purpose.

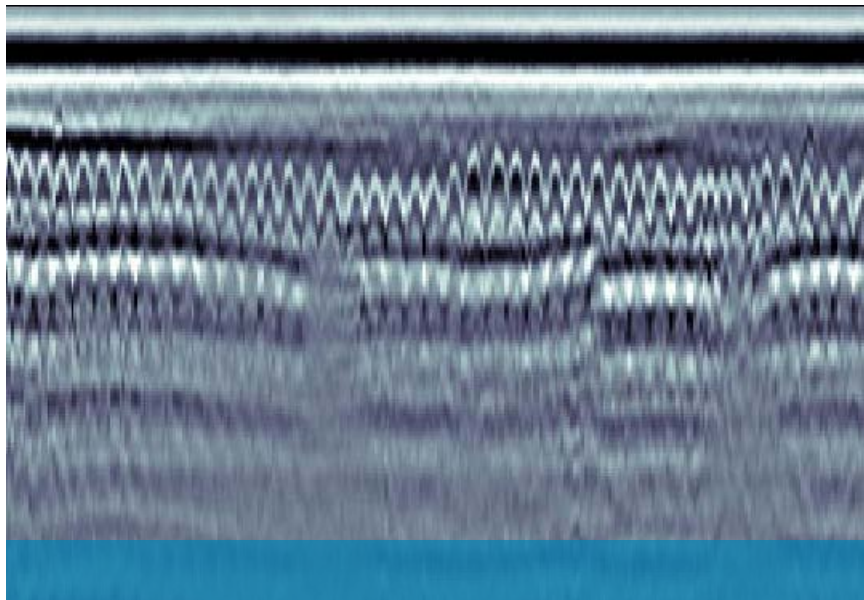
RoadMap GPR is optimized to conduct bridge deck investigations.

Our SmartTrailer with multiple sensors facilitates acquisition of data at highway speeds to minimize traffic management costs. Our hand-push SmartCart units enable detailed local studies when lane closure is planned for other reasons.

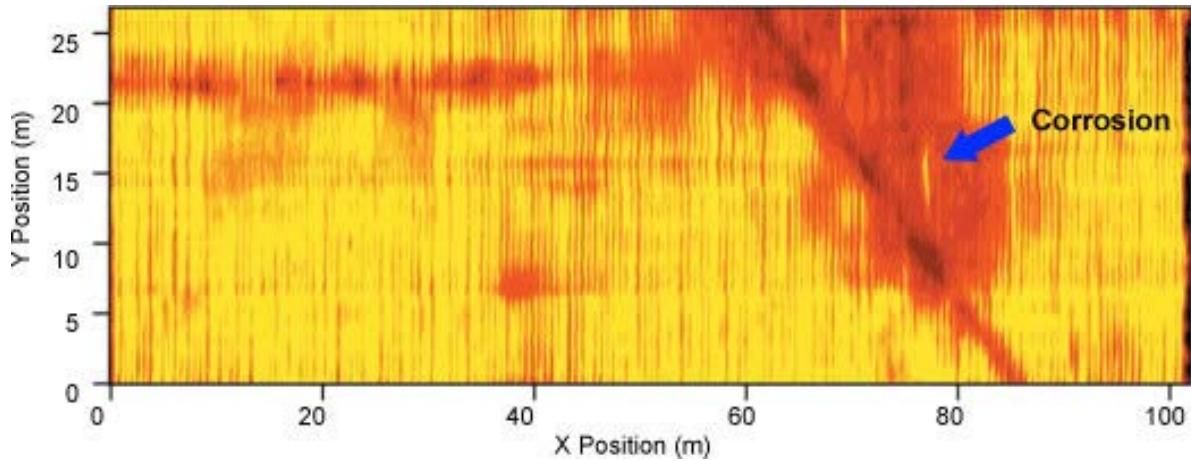


The yellow rectangle in the image above shows a surveyed bridge on the Google Earth map.

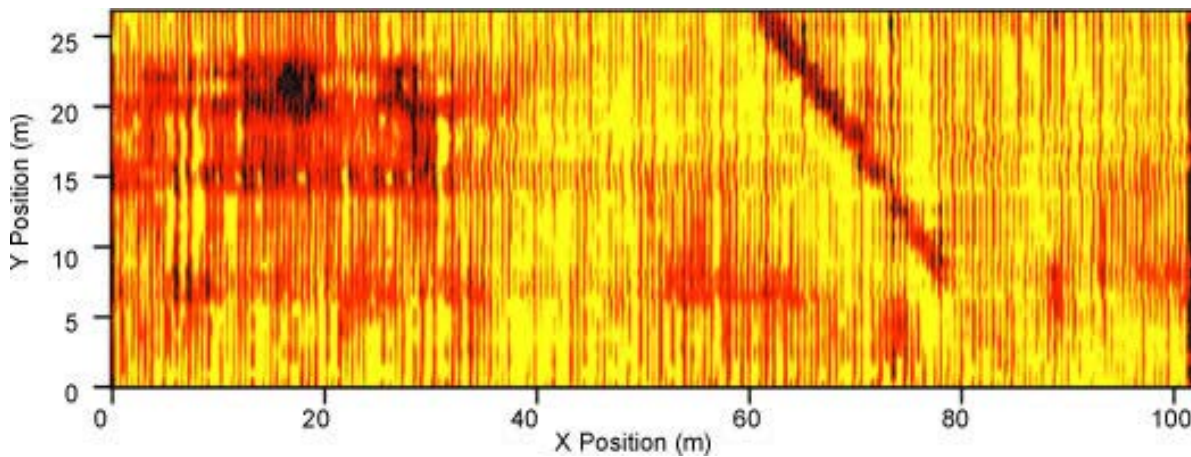
Local data from "Site 1", are shown below, and illustrate using Road-Map high resolution ground-coupled data to analyze rebar reflectivity.



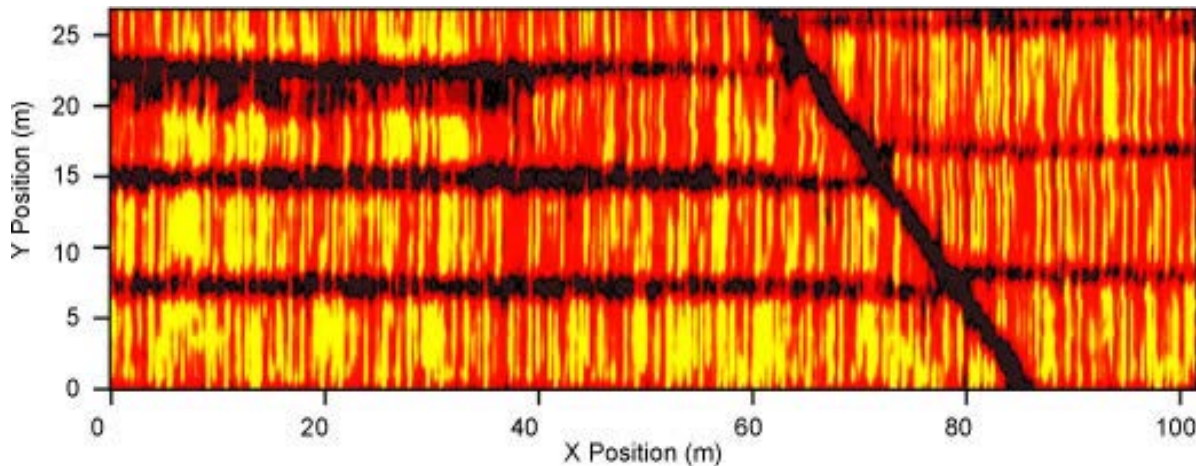
The individual response amplitudes when presented in plan map form are indicative of deck delamination or zones of deterioration. Plan maps of the colour-coded response amplitudes at different depth ranges created using the EKKO_Project SliceView module are shown below. Red shade indicates the degree of deterioration.



Corrosion indication at top mat of rebar on the surface depth slice (depth range: 5 - 15 cm)



Corrosion indication at lower rebar mat on the middle depth slice (depth range: 10 - 25 cm)



Support steel structure under bridge deck on the bottom depth slice (depth range: 20 - 40 cm)

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