

Near Full Depth Infrared and GPR Evaluation & Validation of Steel Grid Decks

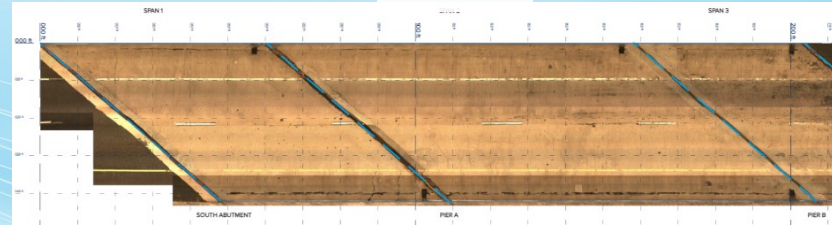


Concrete-overfilled steel grid bridge decks can be susceptible to internal corrosion of the steel grid, leading to the rapid development of large-scale deficient areas in the deck. To evaluate these structures non-destructively, both mobile IR and GPR can be used to find large areas of debonding or corrosion at the top of the grid.

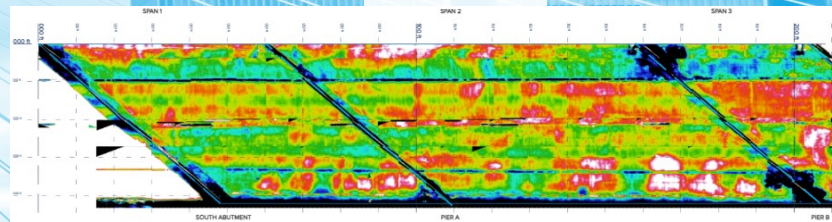
We further explored the possibility of diagnosing severe deficiencies in the lower depths of the deck with mobile collection methods, despite strong reflections from the embedded steel grid. To utilize the concrete spaces in-between the steel plates, we conducted many trial passes over two target bridges and experimented with collection settings. Eventually, we arrived at settings which optimized data visualization in lower depths.

Using ground-truth visual confirmation of deficient findings on the bottom of the deck, we matched signal irregularities confirmed that most moderate to severe findings were detectable in the GPR data.

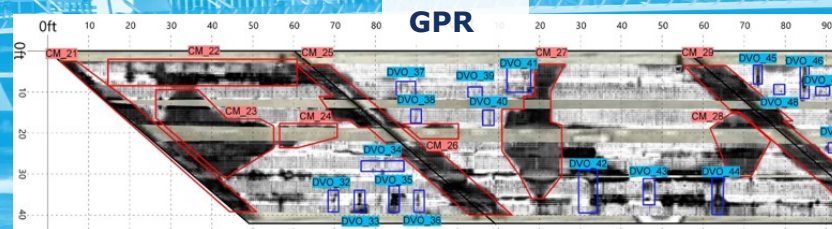
Visual



Infrared



GPR



Project Details

Client	[Maryland Agency] iSee, LLC
Reference	Mark Wolcott mark.wolcott@iseeusa.net
Surface Area	2 Bridges, 19,000ft ²
Project Period	10/2022 - 11/2022

Impression

This task was representative of how novel applications can be efficiently added to routine tasks. While performing a normal analysis of problem areas at the top of steel grid, we attempted what was previously thought a physical impossibility. As a result, there were win-win outcomes for both service-providers and clients. Hard evidence proved our initial assumptions false, we ended up more capable analysts, and we have opened up avenues for offering additional services.