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First Step to Success: Accurate, Precise Condition of Asset

Lack of data and visibility for the condition of assets (specifically bridge decks) can lead to construction time and cost overruns. The most favorable strategy is to start the design process by having accurate repair quantities and a 360-degree picture of the asset's condition to identify the exact project scope and save costs by preventing overruns.



Figure 1. Typical images of a bridge and a bridge deck

Methodology: High Speed & High Definition Scans

This bridge inspection solution called “insight” has three main components. High-Speed scanning platform that can scan the bridge deck at speeds as high as 40 mph with no need for traffic control and a High-Definition platform that is the fastest system in the industry equipped with ground coupled sensor technology with scanning coverage as high as 5,700 sqft/hr.



Figure 2. High-speed platform (left), High-definition platform (right)

Sensor Technology and Results

The high speed system is equipped with the following technologies: Ground Penetrating Radar (moisture ingress and top cover depth surveys), high-speed chain drag and infra-red thermography (finding delamination and defects), high-resolution surface imaging (automated crack mapping based on user-defined ranges), laser surface profilers and LiDARs (deck longitudinal profile and measurements), 360 degree imaging (visual inspection). The high-definition platform is equipped with impact echo (full-depth defect survey), ultrasonic surface wave (estimation of modulus of elasticity) and high resolution GPR. All results are made available through an online, interactive asset management portal for the users to view and utilize.

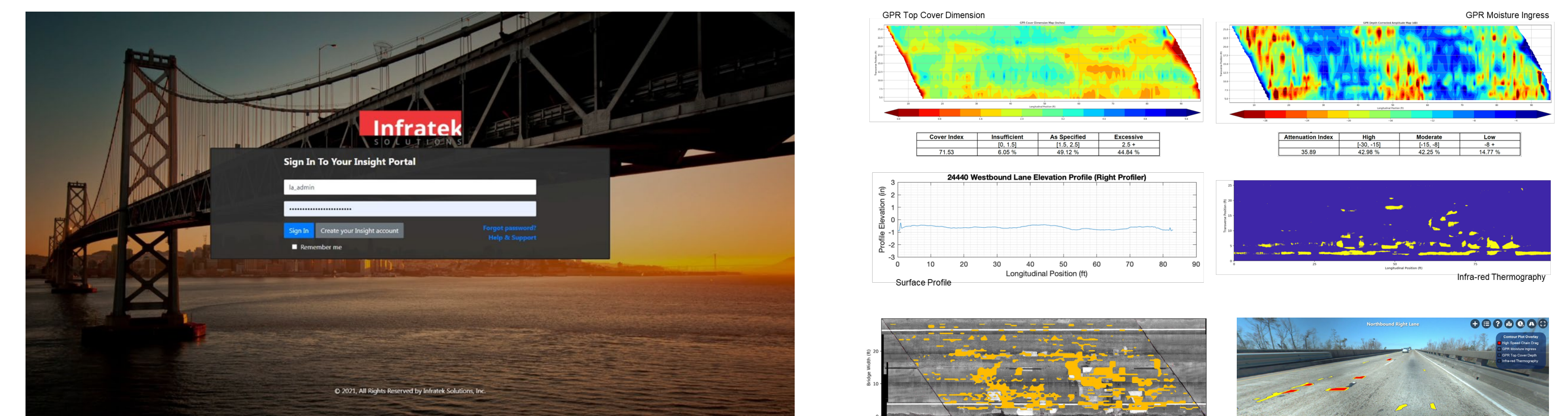


Figure 3. Online portal and view of the results

Upcoming Project with VTrans

VTrans intends to use the insight system on 12 bridges across the state to identify accurate quantity and location of surface and subsurface defects. This information will be used by designers and decision makers to devise preservation and rehabilitation plans for the upcoming projects.

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