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First Step to Success: Accurate, Precise Condition of Bridge Decks

Insufficient data and limited visibility into the condition of bridge decks, can result in construction delays and cost overruns. The best approach is to begin the design process with accurate and reliable surface and subsurface conditions. This allows for accurate project scoping and helps avoid unnecessary expenses.



Figure 1. Typical 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.

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 AI crack mapping based), laser surface profilers, LiDAR, and 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

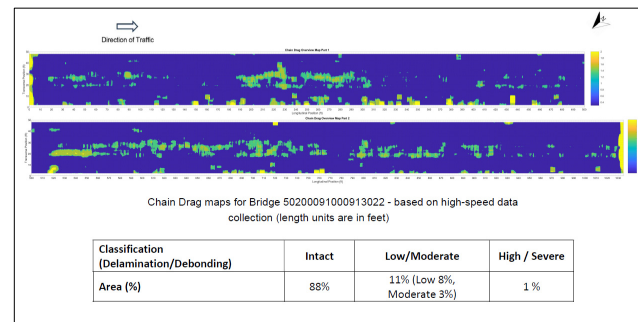


Figure 2. Sample Results Showing Delamination (Top); High Speed System (Bottom Left); High Definition System (Bottom Right)

Outcomes & Conclusions

VTrans used the insight High-Speed and High-Definition systems on 12 bridges across the state to assess the benefits of Non-destructive Evaluation Technologies and 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.



Figure 3. Field Visit by the VTrans Team

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