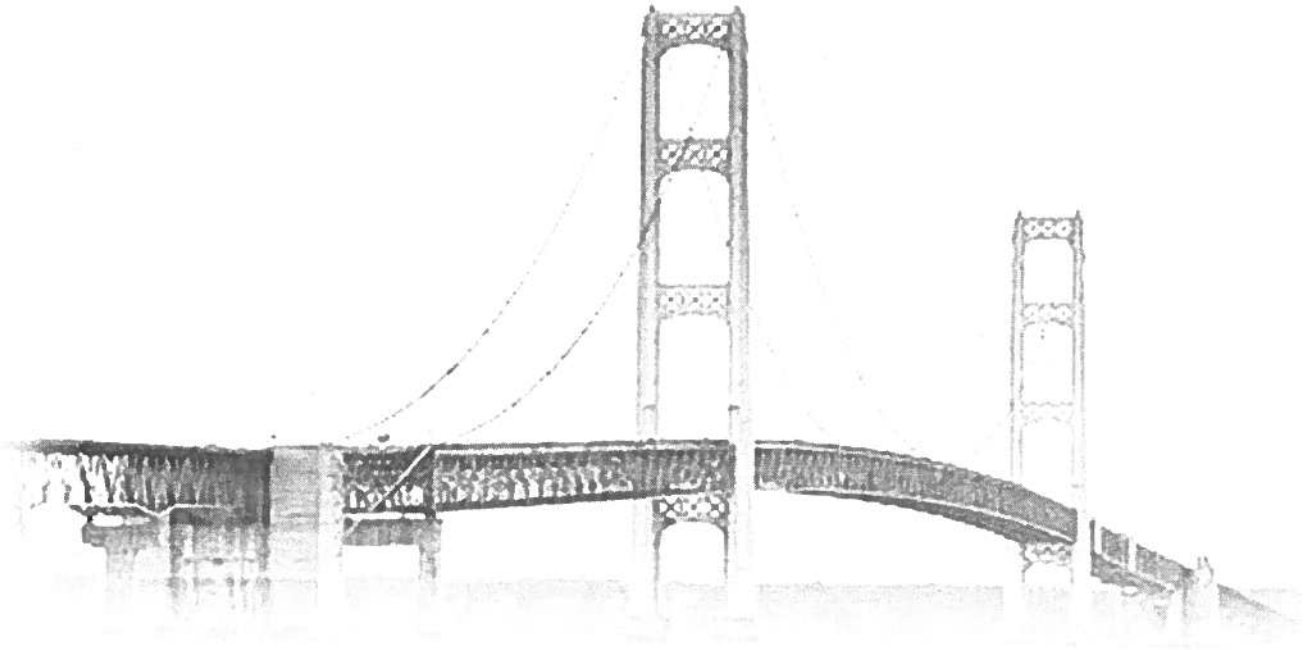
Michigan
House Committee on Transportation and Infrastructure



Presentation by:
Dorothy Ruohonen - CEO
Jay Ruohonen – President

September 24, 2013

Talon Research, Inc. – Hancock, MI

Dorothy Ruohonen – CEO, Owner

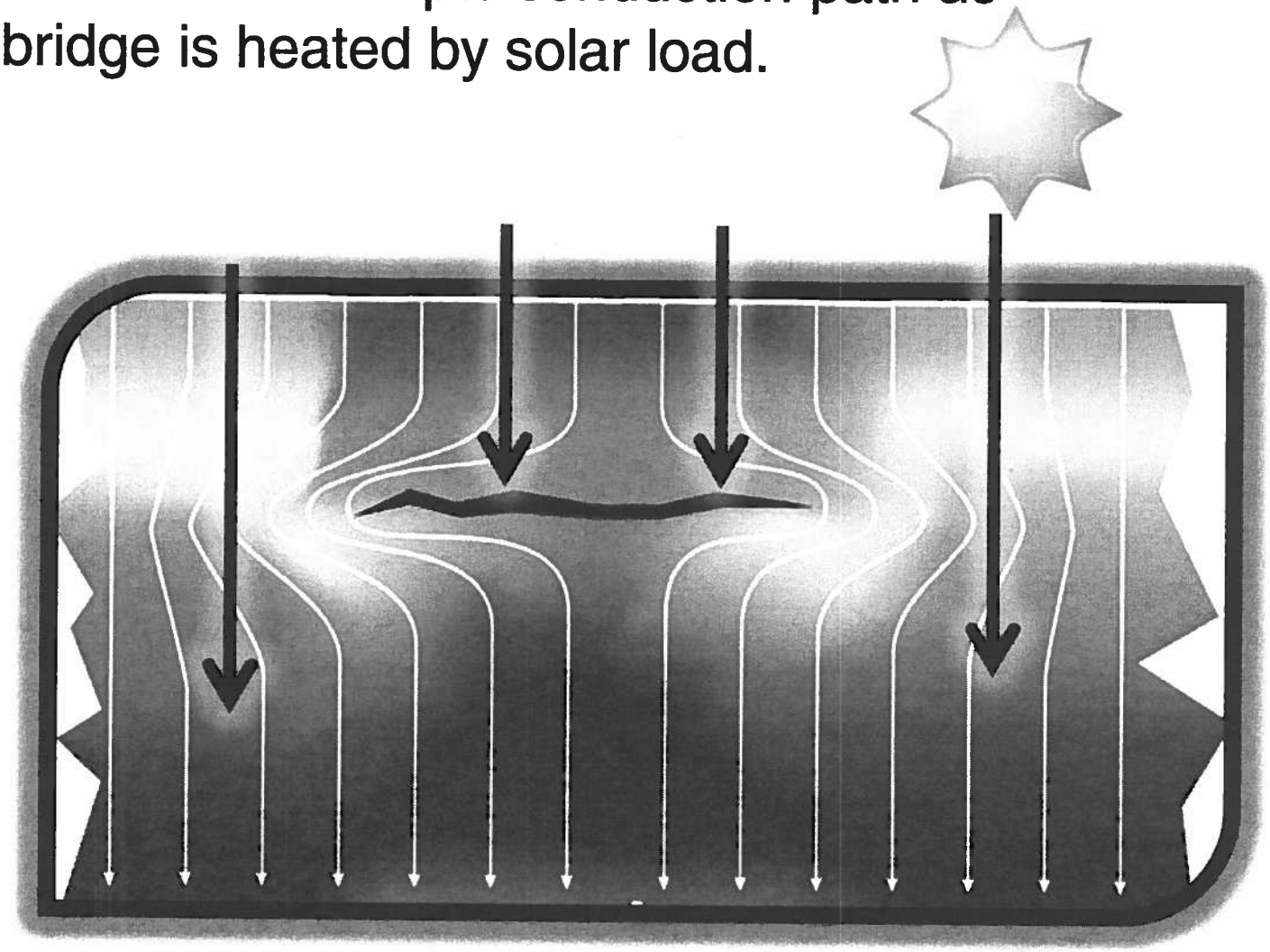
Jay Ruohonen – President

- Two Divisions
  - Hawk Technologies – Mechanical, Electrical, Civil CAD platforms -1987
  - BridgeGuard – Proprietary Infrared Software Suite - 2009

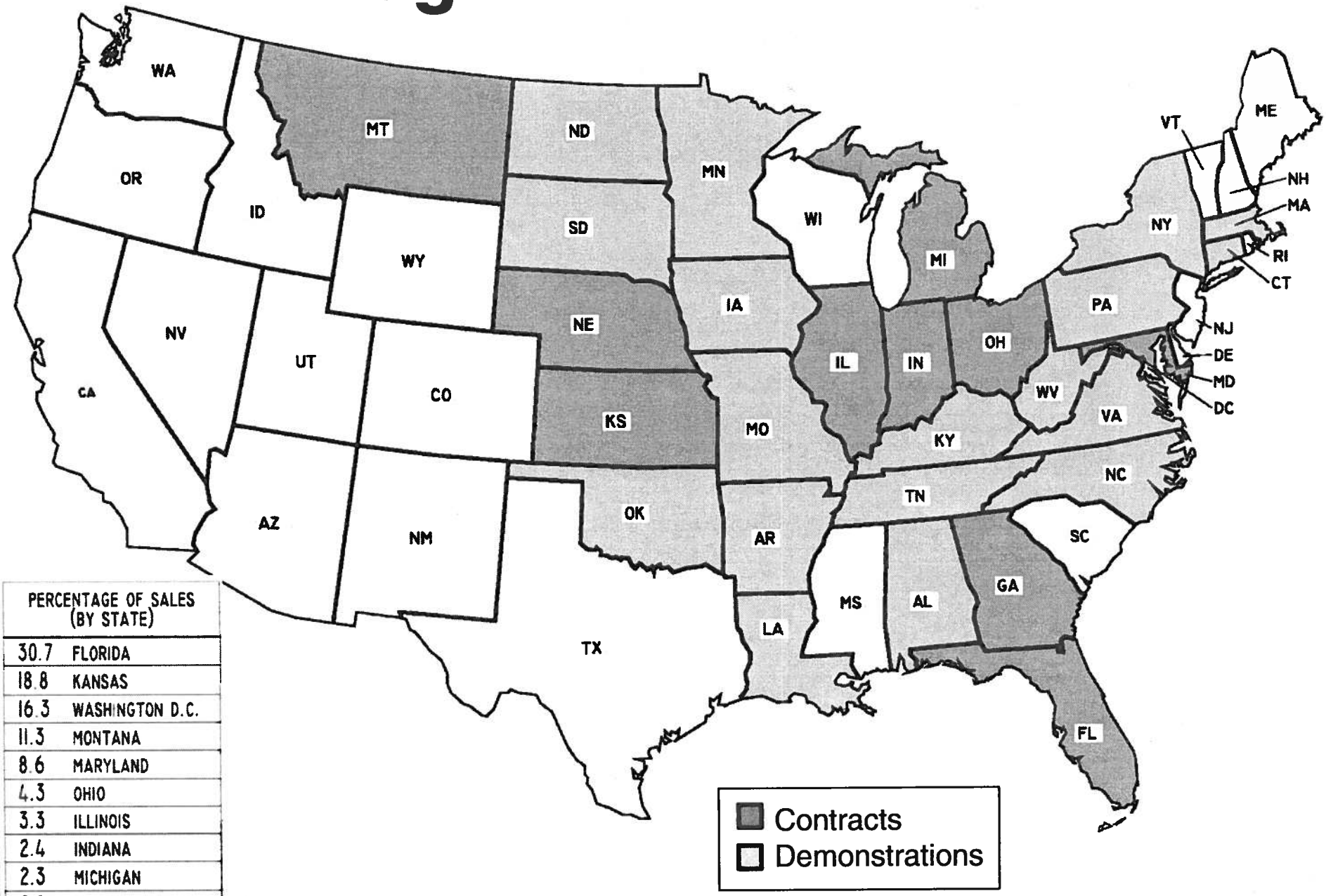
WOSB - HUBZone – SmartZone

Thermal Principle

Delamination interrupts conduction path as the bridge is heated by solar load.

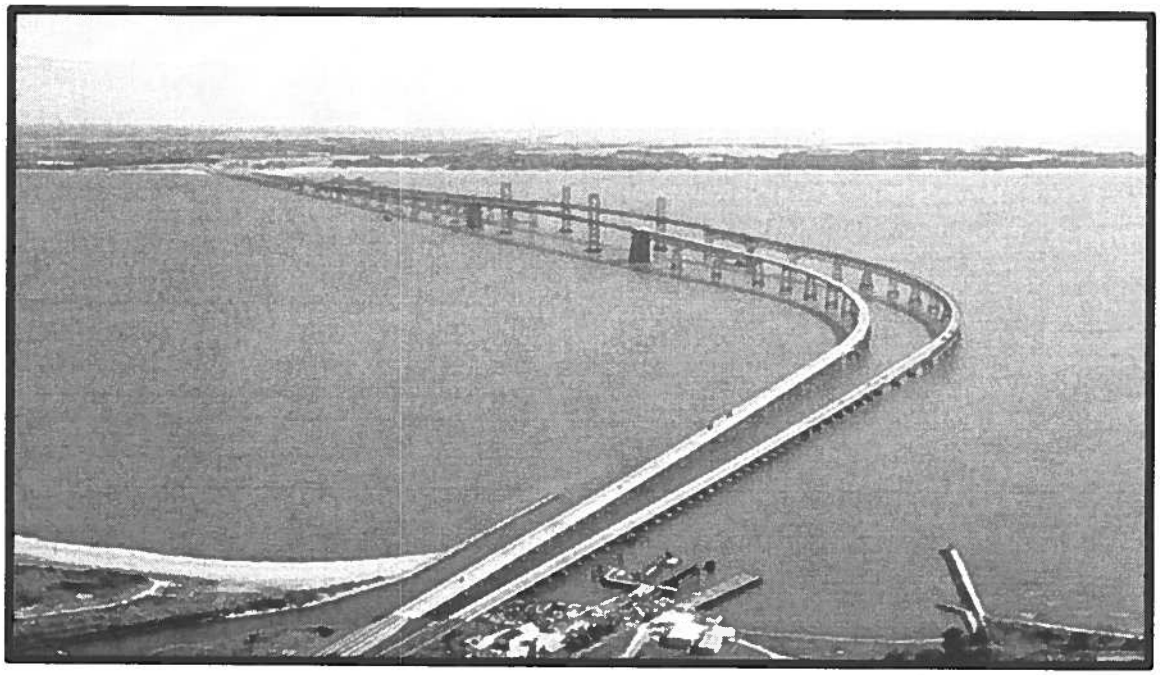


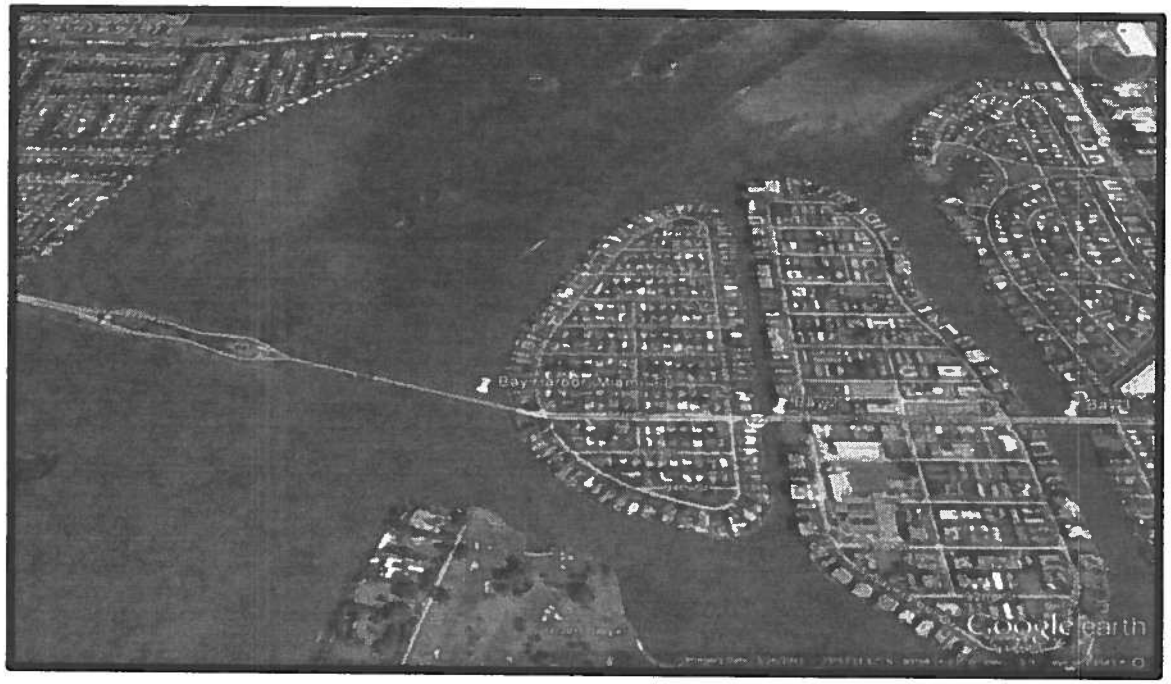
BridgeGuard Presence



PERCENTAGE OF SALES (BY STATE)	
30.7	FLORIDA
18.8	KANSAS
16.3	WASHINGTON D.C.
11.3	MONTANA
8.6	MARYLAND
4.3	OHIO
3.3	ILLINOIS
2.4	INDIANA
2.3	MICHIGAN
2.0	NEBRASKA

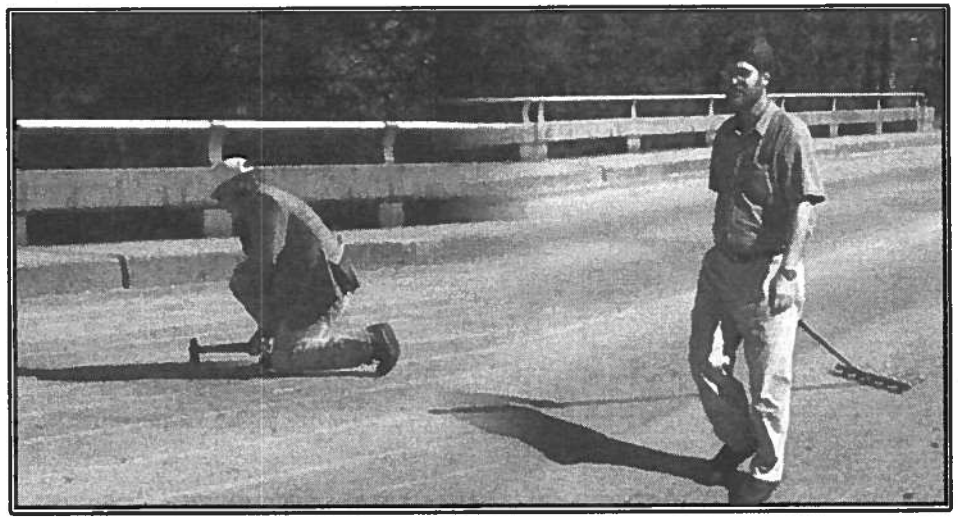
Chesapeake Bay
Bay Bridge, MD, 4.5 miles long-
Eastbound
628,000+ sf





Miami, FL, Corridor of bridges,
deck/sub
28,000+ sf

Safety & Technology- I Think Not



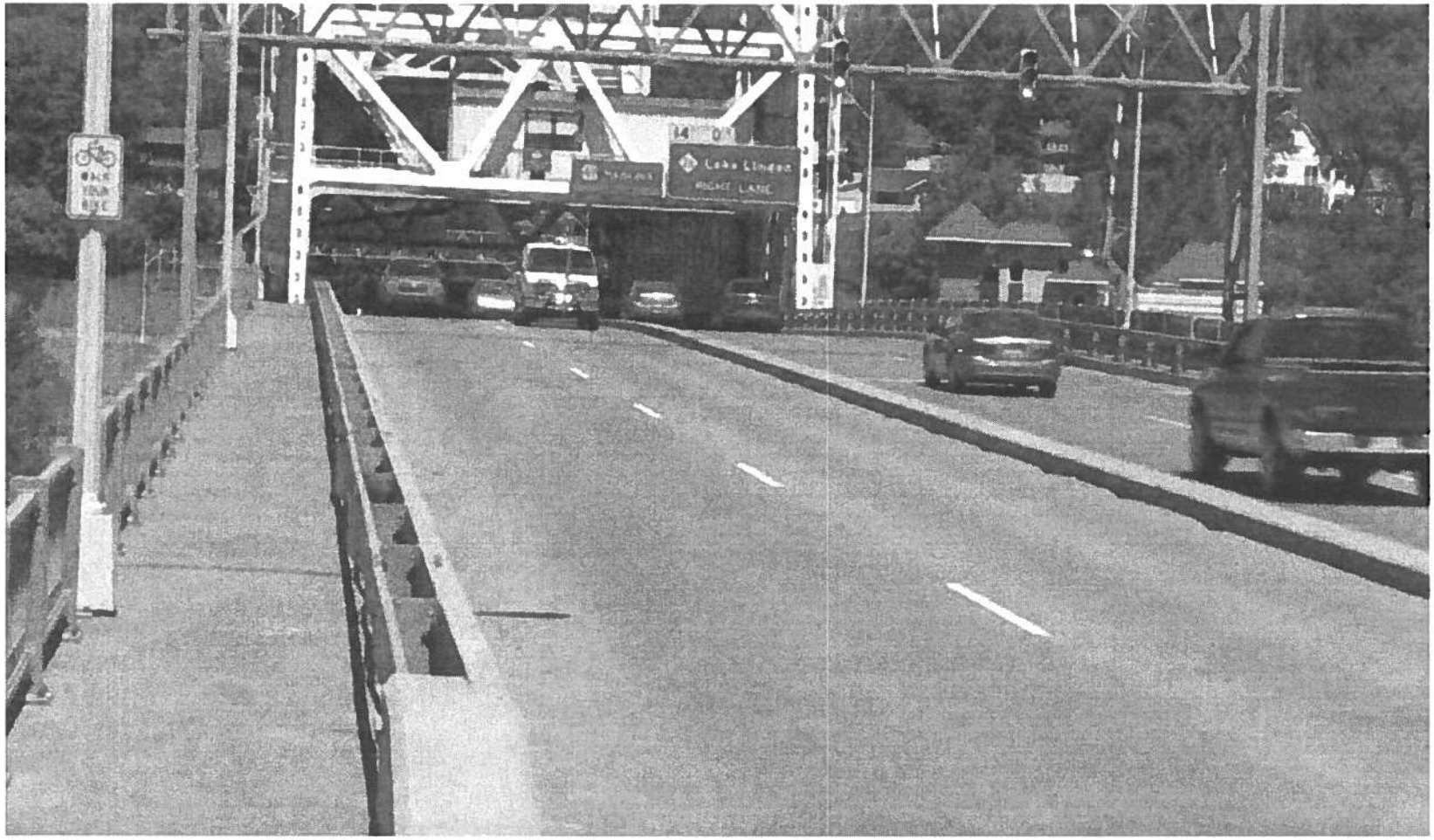
Hammer Sounding & Chain Drag

(906) 483-2679 • info@BridgeGuard.net • www.BridgeGuard.net

Delays cost Money!

FHWA - Road User Costs (RUC)

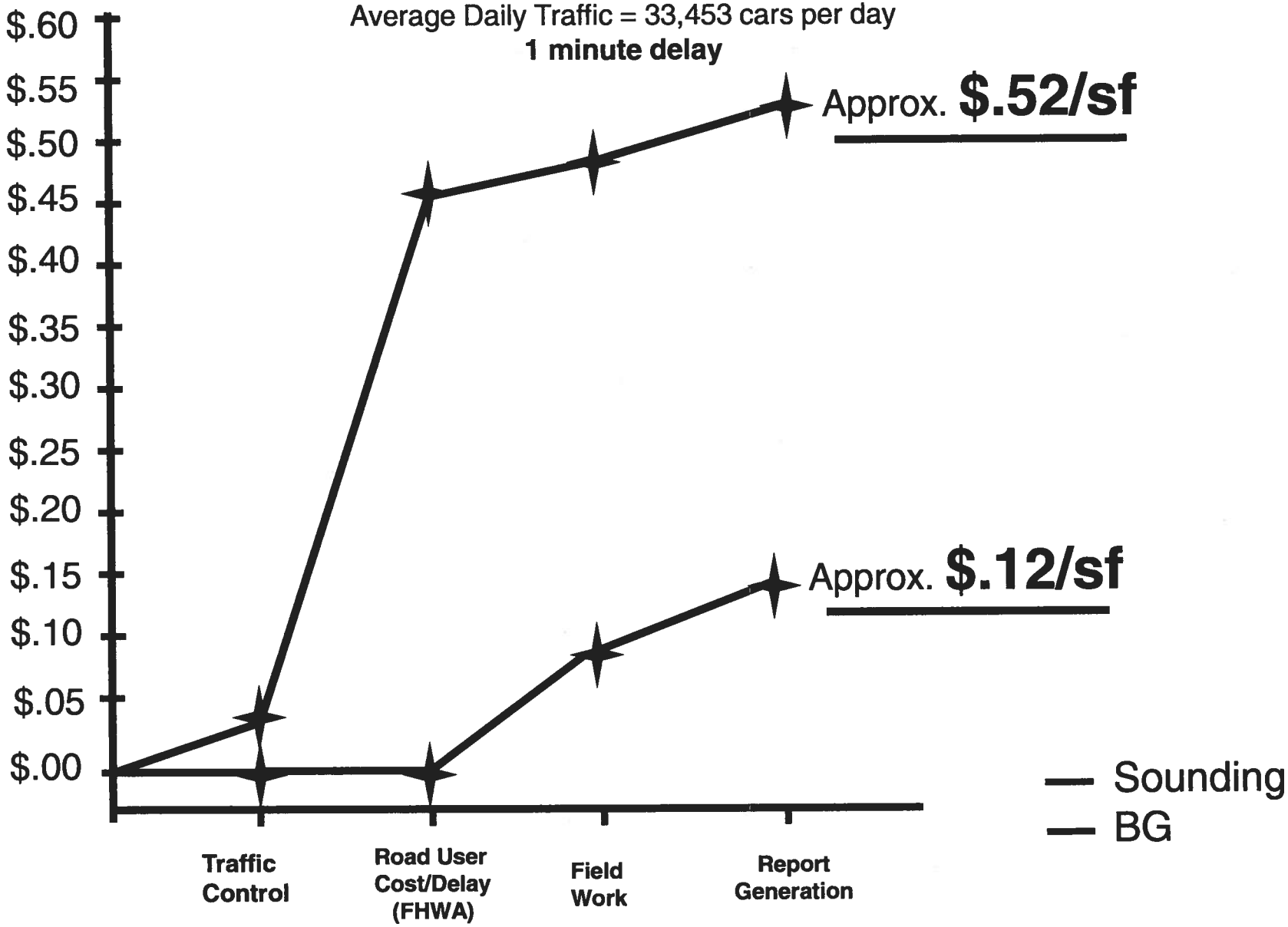
Scanning at Highway Speeds



I-496 over Grand River, Lansing

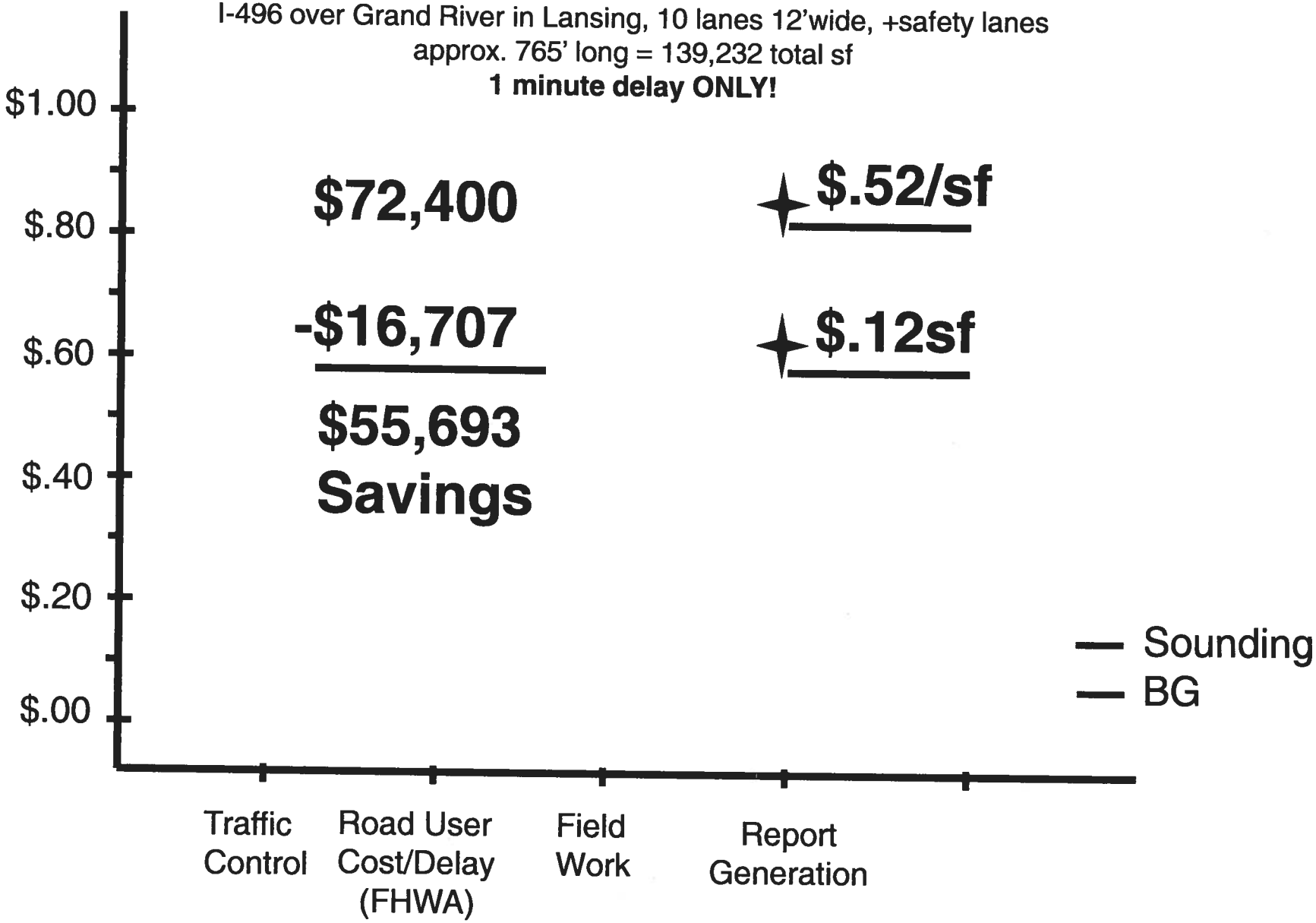
Cost Comparison $/sf

I-496 over Grand River in Lansing, approx. 765' long = 139,232 total sf
Average Daily Traffic = 33,453 cars per day
1 minute delay



Cost Comparison $/sf

I-496 over Grand River in Lansing, 10 lanes 12'wide, +safety lanes
approx. 765' long = 139,232 total sf
1 minute delay ONLY!



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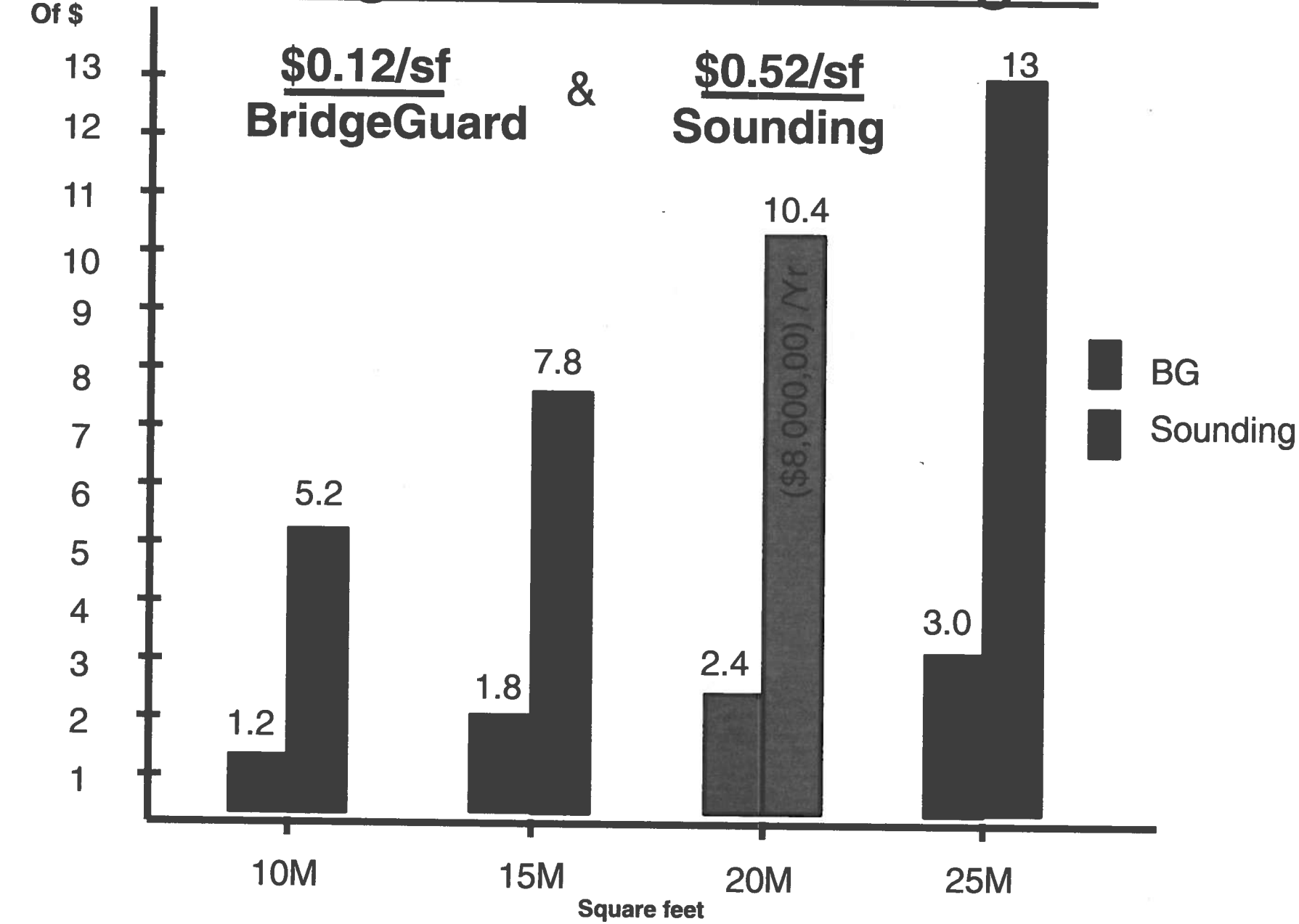
Michigan's State Trunkline Bridges

- MI House Fiscal Agency 2013 Report
  - State Trunkline 4,406 40.3% of bridges
  - Approximately 50,000,000 square feet of deck
  - 74.2% of the states total bridge deck area
  - Carries 81% of daily traffic

Michigan Trunkline Bridges



BridgeGuard Benefits

Faster, Cheaper, Safer, Smarter, Innovative

- Accurate & repeatable locating of delaminations & cracks
- No lane closures (50+ mph)
- No Road User Costs
- No safety concern/risk for MDOT personnel
- Save taxpayer money $$$
- Far exceeds existing 1986 ASNT standard
- Deliverable in a CAD format (MicroStation or AutoCAD)
- Industry proven and accepted technology
- Exporting to Canada in 2014 – bringing outside $ into Michigan

Made In Michigan

Creating Michigan Jobs!

(906) 483-2679 • info@BridgeGuard.net • www.BridgeGuard.net

Jobs for Michigan!
Talon Research Statistics

2011 payroll…..$350,000	7 employees
2012 payroll…..$500,000	10 employees
2013 payroll…..$700,000	16 employees
2014 payroll…..$1,100,000	25 employees?

(906) 483-2679 • info@BridgeGuard.net • www.BridgeGuard.net

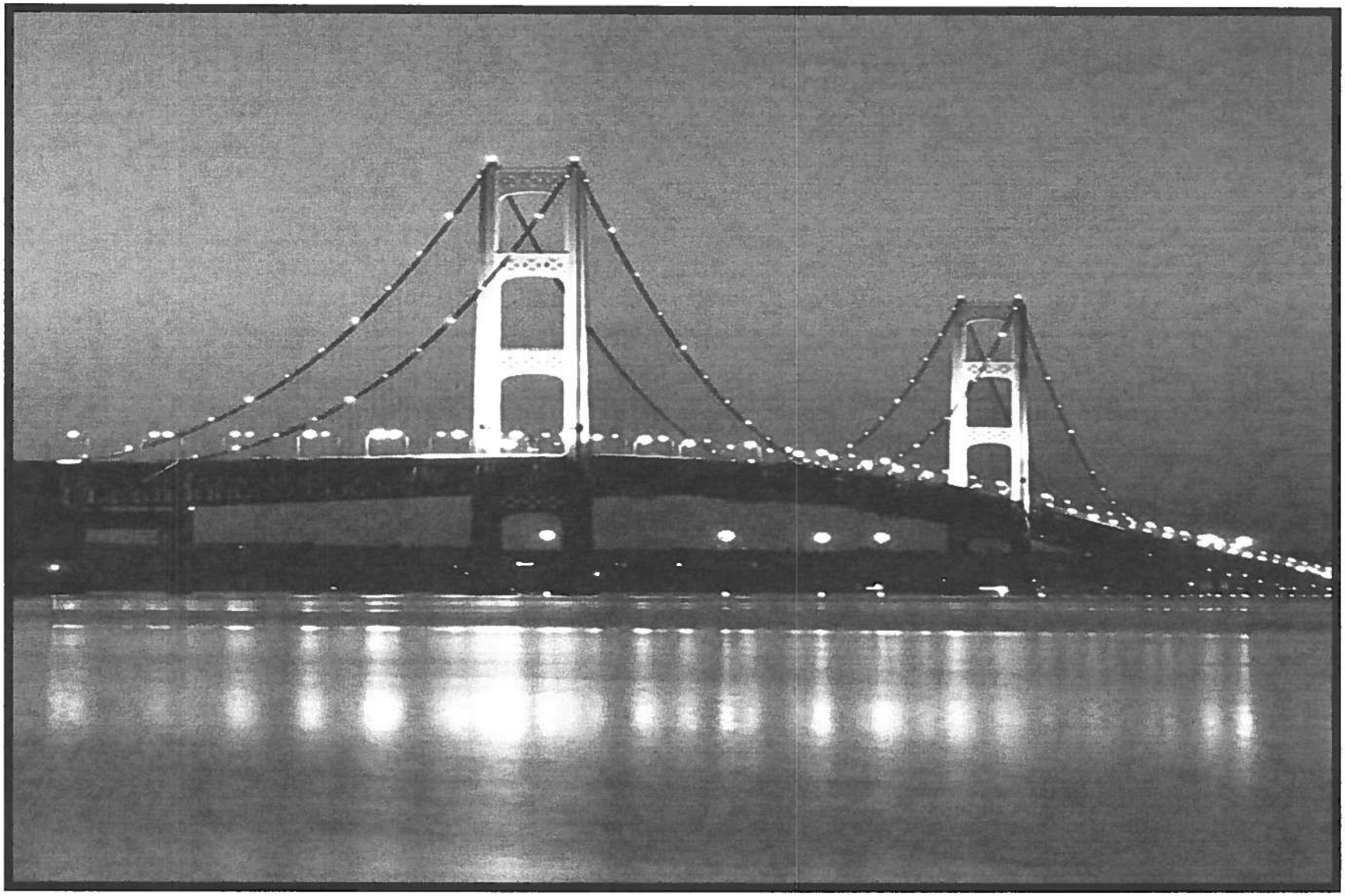
How do we move forward from here?

BridgeGuard proposes a
2 year bridge scoping contract
to scan and provide detailed
CAD reports on all 4,406
State trunkline bridges
(2,203/year per FHWA)

Michigan

can be the leader in innovative infrastructure technologies!

Thank You!



www.bridgeguard.net

BRIDGEGUARD®
Division of Talon Research, Inc.

INFRARED BRIDGE SCOPING SERVICES

Project Update

June 26, 2013

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Additional information is available at
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"BridgeGuard Infrared photography (thermography) of the bridge substructure accelerated the project schedule by reducing weeks of sounding, for substructure of the three bridges of Bay Harbor.

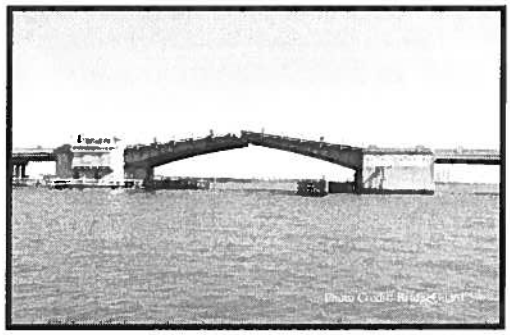
The data BridgeGuard collected was delivered in two forms; Excel tables and CAD files, which we incorporated into our contract plans."

Steve H., Structural Engineer
Hardesty & Hanover, LLP

Bay Harbor Islands

Client:	City of Bay Harbor Islands, FL., facilitated by Hardesty & Hanover, LLP
Service:	Bridge Substructure Spall and Delamination Survey using the BridgeGuard® 300 thermal imaging and mapping system.
Status:	Complete
Bridge Geometry:	Project included: 3 bridges Collection time: Five days Total scan area: 22KSF

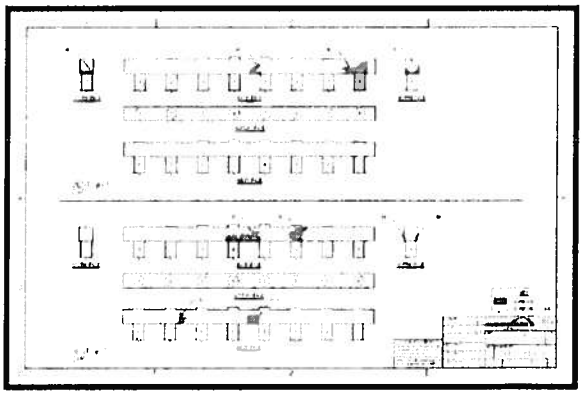
The Problem



Set between Miami and Fort Lauderdale, Bay Harbor Islands has three interconnecting bridges that serve as the main arterial for traffic from North Miami to the barrier island of Bal Harbour and surrounding areas. The City of Bay Harbor needed a spall and delamination survey completed.

While much of the Broad Causeway substructure is accessible from the water below, the caps of the bridges were out of reach for traditional sounding and would have required the use of a snooper truck. Using a snooper truck would have meant closing traffic lanes. With an ADT exceeding 20,000[1], any lane closure would be costly to the public.

The Solution



Sample CAD drawing of typical bridge substructure with defects indicated.

BridgeGuard® can scope surfaces up to 125' away. This eliminated the need for lane closures. In the planning stages, BridgeGuard®'s analysis team was given the challenge of incorporating CAD into the reporting process to better suit the client's needs. During the collection phase, the team used control defects verified by hammer sounding to ensure optimal scanning data. The bridge data was acquired in bents and uploaded to the analysis team for review. Next, the team produced bridge structure drawings, layering the different types of anomalies (e.g., spalls, delaminations) from the infrared images collected by the field technicians into a series of CAD drawings for insertion into repair plans. Ultimately, this allowed for seamless viewing of defects in the client's preferred format.

About BridgeGuard®

BridgeGuard®, a Division of Talon Research, Inc., is an infrared imaging service designed to safely identify and quantify delaminations within concrete bridge decks and substructures. BridgeGuard® uses an infrared imaging sensor and sophisticated proprietary analysis software to identify and quantify the thermal indications of delaminations.

[1] http://t-4america.org/resources/bridges/

BRIDGEGUARD®
Division of Talon Research, Inc

INFRARED BRIDGE SCOPING SERVICES

Project Update

May 3, 2013

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"Road user costs are escalating at the same time that DOTs find themselves with reduced operating budgets. Avoiding delays to commerce are imperative and the DOT must still conduct bridge evaluations. With these factors in mind BridgeGuard® prides itself with helping the DOT on both fronts."

David Raasakka, National Sales Manager-BridgeGuard®.

Additional information is available at www.bridgeguard.net

Washington D.C. Bridges

Client:	District Department of Transportation (DDOT), facilitated by Martins Construction Corp.
Service:	Bridge Deck Spall and Delamination Survey using the BridgeGuard® 110 thermal imaging and mapping system.
Status:	Complete
Bridge Geometry:	Project included: 25 bridges Total collection time: Three days Total scan area: 1.3M SF

Washington D.C., our nation's capital, is widely known for its panoramic sites, rich history, and is also home to some of the nation's most iconic bridges. The city's diverse bridge population carries several hundred thousand vehicles per day throughout the metro area and provides crucial arterial routes across the Potomac River into Virginia. As with any large urban area, maintenance on existing bridge structure can be a challenge. When DDOT wanted to determine the amount of delamination and spalling that was present on a group of its bridges, BridgeGuard® was chosen for its accuracy and low-impact data collection features.

Photo credit: BridgeGuard®

In the planning stages BridgeGuard® technicians loaded the bridge geometry data into its corridor module to maximize data collection periods. During the collection phase the team used control defects that were verified by hammer sounding so they knew they were collecting infrared data at the appropriate time. Periodic spot checks were also performed. The scanning of these bridges over the course of a few days was a monumental task in itself, complicated by traffic in the nation's most congested area[1].

Scanning a bridge project of this size creates a tremendous amount of data. For that reason the bridge data on some of the larger structures was acquired in segments according to stationing, uploaded to the analysis team for review, and then disseminated as a series of smaller reports in a CAD-friendly format.

Field technicians utilized the technology to work with the flow of traffic and the analysis team provided concise, scalable defect maps within 30 days of scan completion. By acquiring deck condition data at near-highway speeds, BridgeGuard® was able to assure the bridge owner that traffic flow would not be impeded.

About BridgeGuard®

BridgeGuard®, a Division of Talon Research, Inc., is an infrared imaging service designed to safely identify and quantify delaminations within concrete bridge decks at speeds of 45mph, in addition to reporting on substructure elements. BridgeGuard® Services uses an infrared imaging sensor and sophisticated proprietary analysis software to identify and quantify these thermal indications of delamination. The technology is licensed and distributed by Talon Research, Inc.

[1] *Roads & Bridges Magazine, Tuesday, February 5, 2013*

BRIDGEGUARD®
Division of Talon Research, Inc

INFRARED BRIDGE SCOPING SERVICES

Project Update

February 1, 2013

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"With limited funding available to Departments of Transportation across the US, we are proud that we can be an integral part of the cost saving process.

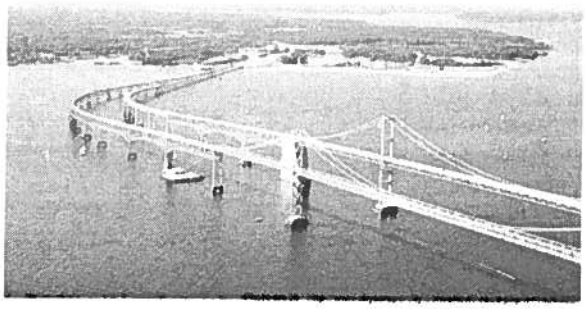
A project of this magnitude highlights the ability of BridgeGuard's technology to capture this amount of data over just a matter of hours, without interrupting commerce in any way."

Jay Ruohonen, President of Talon Research, Inc.

Chesapeake Bay Bridge (William Preston Lane Jr. Memorial Bay Bridge EB lanes)

Client:	Maryland Transportation Authority (MDTA), facilitated by Whitman Requardt & Associates.
Service:	Bridge Deck Spall and Delamination Survey using the BridgeGuard® 110 thermal imaging and mapping system.
Status:	Complete
Bridge Geometry:	Clear roadway width 28' Project length 21,291' Total scan area 596,148 SF

Spanning over 4 miles across the Chesapeake Bay, from Anne Arundel County to Queen Anne's County, the William Preston Lane Jr. Memorial Bridge is an iconic bridge of Baltimore and its outlying areas.


Chesapeake Bay Bridge in foreground, looking northwest.

The two-lane eastbound structure carries up to 54,600 vehicles per day and is in close proximity to the National Security Agency (NSA) and Annapolis Naval Academy, as well as providing a crucial path from the Washington D.C. area to the east coast. Sharing a parallel path across the Chesapeake Bay is the westbound bridge, located to the north of the project bridge, and at times of peak traffic flow, some westbound traffic may be shifted to one of the lanes on the eastbound bridge. An eastbound lane closure at that time would have essentially shut down the bridge. BridgeGuard® stepped up to the challenge by working in assigned one to three hour time blocks, even scanning during the overnight hours, ultimately providing concise scalable defect maps within 30 days of scan completion without lane closures or interruption to traffic flow. By acquiring deck condition data at near-highway speeds, BridgeGuard technicians were able to assure the bridge owner that traffic flow would not be impeded.

Scanning a bridge of this size creates a tremendous amount of data. For that reason the bridge data was acquired in segments, uploaded to the analysis team for review, and then disseminated as a series of smaller reports in a CAD-friendly format.

About BridgeGuard®

BridgeGuard®, a Division of Talon Research, Inc., is an infrared imaging service, designed to safely identify and quantify delaminations within concrete bridge decks and substructures. BridgeGuard® Services uses an infrared imaging sensor and sophisticated proprietary analysis software to identify and quantify the thermal indications of delaminations. The technology is licensed and distributed by Talon Research, Inc.

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