

## Press release

### **World's largest Kistler Weigh In Motion system for structural health monitoring of bridge in Rhode Island**

Providence, Rhode Island installs traffic and structural health monitoring system to proactively maintain vital bridge

PROVIDENCE, R.I., August 2024

**The Rhode Island Department of Transportation (RIDOT) is partnering with Kistler, a global leader in dynamic measurement technology, to provide state-of-the-art technology solutions to monitor and protect the structural health of the Washington Bridge, a vital bridge in the city of Providence. At project completion, the smallest state in the U.S. will have the largest Digital Weigh In Motion (WIM) site in the world, with 40 Lineas digital quartz sensors covering 10 traffic lanes.**

Providence is not the only city in the U.S. with need to protect vulnerable bridge infrastructure. However, it is one of the only cities in the U.S. that is proactively using advanced technology to help maintain the structural health of its critical bridge, the Washington Bridge. Currently, the north span of the Washington Bridge is being removed and a new span is planned. To keep traffic moving during the north span restoration project, two traffic lanes were added to the south span. Though the load rating on the south span is adequate, with the installation of structural health monitoring solutions (SHM) from Kistler, RIDOT will be able to evaluate the health of the south span in real-time to assess any potential adverse impact from the additional traffic load and enable proactive mitigation of variations in its structural health.

Comprehensive sensor based SHM solutions from Kistler offer real-time data for bridge structural condition monitoring to enable RIDOT to perform predictive analyses and more timely preventative maintenance. Included is a customized Kistler Digital Weigh In Motion (WIM) system to provide real-time evaluation and monitoring of precise bridge traffic load, as that information impacts the structural health of each bridge.

Kistler will outfit the bridge with measuring equipment — accelerometers, strain gauges, temperature sensors, inclinometers and a meteorology station — to measure, collect and interpret bridge health data, and a WIM system to monitor specific load conditions.

For the SHM system, all hardware will be installed on the bridge based on engineers' assessment of structures most likely to experience strain and to diagnose areas in need of repair. For example, while a bridge was built to vibrate and move, accelerometers can measure just how much and whether the movements are within the range of normal specified for that structure. If undue stress is detected by the sensors in real-time, the RIDOT team can implement measures to preserve the bridge's structural integrity and health.

The WIM system includes Lineas Digital quartz sensors from Kistler placed just under the surface of the bridge's roadway, charge amplifiers to condition electrical signals from the sensors, data loggers to process data in real-time and LPR cameras positioned to identify trucks by their class size and monitor for overweight wheel, axle and gross vehicle weight (GVW) loads.

The Kistler SHM and WIM systems are connected to share critical data and paint a picture of the bridge's overall structural health in real-time. With this integrated data, bridge engineers and analysts can work with data on exact loads, axle weights and truck class to monitor the weight of trucks going across the bridge, as well as multiple measurements that assess the loads on the bridge structure to assess predictive maintenance requirements or be alerted to the need for emergency repairs.

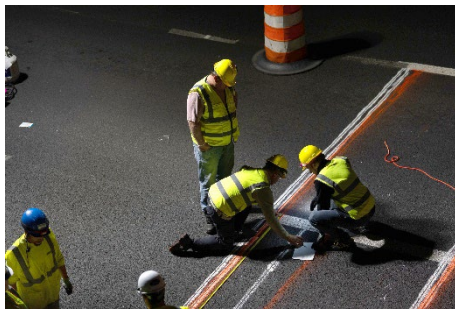
"Bridges talk to us," observes JT Kirkpatrick, head of sales, Traffic Solutions, Kistler. "With Kistler's Digital Weigh In Motion sensors, we have the ability to hear and interpret every sound, even nearly inaudible sounds, emitted from a bridge that signal structural distress. This will enable us to work with RIDOT to proactively monitor the bridge's structural health in real-time so they can take action to preserve this vital structure."

Image material (please name the Kistler Group as picture source)



**KiTraffic Digital Weigh In Motion (WIM) system:** the advanced digital platform weighs trucks in real time and at any speed with a proven high accuracy. Overweight vehicles are easily identified and can be automatically fined, stopped and forced to unload, or diverted to an alternate route – ensuring an effective protection of both roads and bridges.

Photo Credit: Kistler Instrument Corporation



The Kistler team installs KiTraffic Digital Weigh In Motion (WIM) systems, flush with the road surface.

Photo Credit: Eli Zink, Mineral Media and Kistler Instrument Corporation



The Washington Bridge in Providence, Rhode Island will be outfitted with over 100 structural health monitoring systems provided by Kistler.

Photo credit: Eli Zink, Mineral Media

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#### About the Kistler Group

Kistler is the global market leader for dynamic pressure, force, torque and acceleration measurement technology. Cutting-edge technologies provide the basis for Kistler's modular solutions. Customers in industry and scientific research benefit from Kistler's experience as a development partner, enabling them to optimize their products and processes so as to secure sustainable competitive edge. Unique sensor technology from this owner-managed Swiss corporation helps to shape future

innovations not only in automotive development and industrial automation but also in many newly emerging sectors. Drawing on our extensive application expertise, and always with an absolute commitment to quality, Kistler plays a key part in the ongoing development of the latest megatrends. The focus is on issues such as electrified drive technology, autonomous driving, emission reduction and Industry 4.0. Some 2,200 employees at more than 60 facilities across the globe are dedicated to the development of new solutions, and they offer application-specific services at the local level. Ever since it was founded in 1959, the Kistler Group has grown hand-in-hand with its customers and in 2023, it posted sales of CHF 465 million. About 9% of this figure is reinvested in research and technology – with the aim of delivering better results for every customer.