

CASE STUDY

Real-Time Monitoring Ensures the Safety of a Road in Southern California



PROJECT TYPE: Coastal erosion monitoring

COUNTRY: United States

INDUSTRY: Construction

MAIN PRODUCTS:

- 1 Ackcio Gateway (BEAM-GW)
- 2 Ackcio Vibrating Wire Nodes (BEAM-VW-S8)
- 3 Ackcio Digital Nodes (BEAM-DG)
- 4 Ackcio Repeater Nodes (BEAM-RN)

CHALLENGE



Along the winding coastline in California, erosion threatens the safety of a main service road. Along this stretch of road, the cliffs that drop off steeply to a cove below have advanced inland to within 20 feet of the road.

Real-time monitoring of the road surface stability was needed to ensure the safety of vehicles and people travelling it, and ongoing public access. The monitoring would also reduce the risk of road closures by providing advance notice of potential stability concerns, helping to de-risk the chance that staff might not have continued access to critical infrastructure.

GEO-Instruments, a U.S.-based company specialising in geotechnical and structural monitoring solutions, was contracted to provide continuous monitoring of the road surface.

SOLUTION



To ensure a stable, steady stream of real-time data from the project site, GEO-Instruments chose the Ackcio Beam for its proven ability to reliably deliver automated readings even in rugged settings, which lacks cell service and required networked communications to a wifi outlet. Ackcio also provided seamless compatibility with the various project sensors, including a Measurand ShapeArray (SAA), and piezometers, as well as the benefit of quick and easy installation backed by top-notch support and service.

Engineers required near real time direct sub-surface measurements. GEO-Instruments opted for a 600ft 183-segment ShapeArray installed horizontally in a trench below the road surface, covered in 10ft sections of protective pipe before the trench was backfilled with grout.




Ackcio Vibrating Wire Nodes (BEAM-VW-S8) and Ackcio Digital Node (BEAM-DG) are attached to the sensors. They are located inside manholes, with the longest link of 120 metres pushing out of the manhole. Ackcio Repeater Nodes (BEAM-RN) were also deployed to act as data bridges and provide redundancies between the Nodes to ensure a steady flow of readings from the sensors through to the Ackcio Gateway (BEAM-GW). From here, sensor measurements were sent to the plant's network by point-to-point radio and then forwarded to the cloud for processing.



The installation went very smoothly, and careful planning reduced installation time from a predicted 4 hours to just 1.5. The solution reliably sends data providing a real-time picture of the road's stability.



Benefits

-  Quick, easy installation
-  Reliable, real-time readings
-  Durable construction for a rugged site

RESULTS



Remote, real-time data access



Reliable, stable readings



Increased road safety



Improved risk management



TESTIMONIAL

The ability to read longer instruments and the networking ability the system offered in a challenging location was a key factor on this project.

— **Paul Thurlow**

Vice President, Western Region, Geo-Instruments



ABOUT GEO-INSTRUMENTS Established in 2003, GEO-Instruments provides geotechnical and structural monitoring solutions to support owners, infrastructure operators, engineers, and construction companies in mitigating risk, optimising designs and methods, and documenting regulatory compliance. GEO-Instruments can work as an independent consultant or partner with the design and construction team depending on the project's needs. A Keller affiliate since 2017, GEO-Instruments has U.S. offices in Rhode Island, New York, DC, Georgia, Florida, Illinois, Texas, Nevada, California, and Washington and international locations in Canada, the UK, Germany, France, and Poland.



ABOUT ACKCIO Ackcio builds reliable wireless data acquisition systems for industrial monitoring applications. The company automates monitoring processes and provides remote, intelligent data to enable increased safety and efficient risk management in mission-critical industries, including construction, infrastructure, mining, and rail. Ackcio's flagship solution, Ackcio Beam, is an industrial data acquisition platform that uses a patented long-range wireless mesh network to monitor sensors accurately and reliably in both above-ground and underground environments. Ackcio is headquartered in Singapore and supports clients across the world. In 2021, the company was included in Forbes Asia's inaugural '100 to Watch', a list comprising small companies and startups on the rise across Asia Pacific.

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