Remote slope monitoring at Malaysian Kajang Silk highway

Country

Malaysia

Industry

Transport

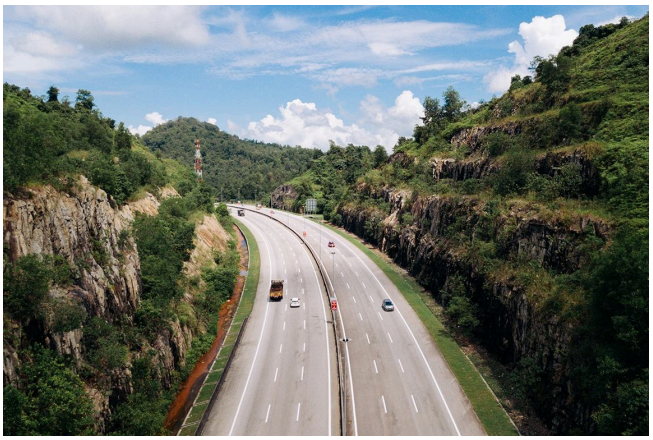
Application areas

Geotechnical
Environmental

Context

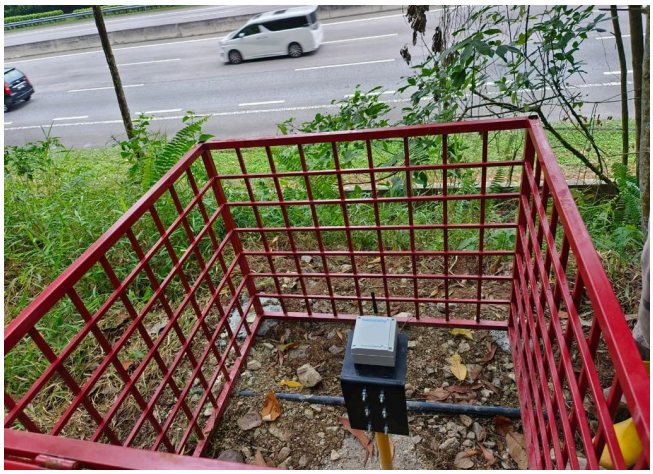
The Kajang Dispersal Link Expressway (Kajang SILK) is a 3-lane dual carriageway with a total length of 37km. Conceived to disperse and regulate escalating traffic in and around Kajang (Malaysia) SILK has turned out to be a primary ring road that allows users to bypass congestion with ease. More than a convenience, it was a necessity considering Kajang's status as one of Malaysia's most populated cities.

Since its opening, the highway operator has put consistent efforts to ensure effective upkeep of road surfaces and commuters' safety, convenience, and overall experience. The client was interested in preventing potential hazards that could derive from the increasingly unpredictable and severe weather in the area. With this purpose it contacted Geomotion Malaysia Sdn Bhd, responsible for instrumentation and real time monitoring, and together they identified slope areas at risk of failure—especially those near heavy traffic.



Solution

Geomotion Malaysia proposed a real-time monitoring system to the client for early detection of potential slope failures. Since the area is typically hilly and inaccessible to people under normal conditions, Worldsensing wireless equipment was installed to ensure remote slope monitoring: Tiltmeter with external antenna and a 4G Rugged Gateway. Data is provided online with real-time monitoring. Since then, the highway operator can easily access the latest slope monitored readings and receive immediate notifications if the values reach the alert level.



"Remote monitoring technology allows for continuous observation of slope conditions and provides critical data access from hard-to-reach areas, helping ensure comprehensive safety without physical presence and compromising the quality of the monitoring."

Ng Eng Chung
Geotechnical Instrumentation Specialist
Geomotion Malaysia Sdn Bhd

Benefits

Adopting a remote monitoring solution enables real-time information of the slope conditions in areas that are otherwise challenging to access. Continuous data collection and analysis, ensures that any changes in slope stability are promptly detected. Providing stakeholders with immediate access to the latest data and alerts facilitates informed decision-making and allows for a coordinated response in the event of potential slope instability.

The ability to remotely monitor and assess conditions also reduces the need for frequent on-site inspections, which can be time-consuming and resource-intensive, especially in inaccessible areas.

As a result, the highway operator can take proactive measures to mitigate risks before they escalate into severe incidents, ultimately safeguarding the safety of commuters and maintaining the integrity of the expressway infrastructure. The infrastructure operator can focus on strategic planning and preventive maintenance, thereby extending the lifespan of the infrastructure and optimizing resource allocation.

The monitoring contract has been extended for another year proving the client's satisfaction who is actively promoting the slope monitoring solution to other highway companies in need of similar technology. Additionally, several other highways under the same operator are likely to soon adopt real-time slope monitoring technology for high-risk areas, further enhancing slope stability and ensuring safety along the entire highway network.

Advantages

- The real-time monitoring system allows for continuous observation of slope conditions, enabling immediate alerts when potential slope failures are detected.
- Utilizing remote slope monitoring technology, the solution provides critical access to data from hard-to-reach areas, ensuring comprehensive safety measures without the need for physical presence.
- The early detection system enhances commuter safety and confidence by preventing hazards, leading to client satisfaction and promotion of the technology to other highway operators.