RMD KWIKFORM

Pont Des Ecrevisses

Customer: Altrad Coffrage & Etaiement

Location: Saint-Claude, Guadeloupe

Products: Megashor, Superslim & Load Monitoring

Case Study

ALTRAD RMD KWIKFORM REINFORCES BRIDGE IN GUADELOUPE

Temporary works specialist Altrad RMD Kwikform (Altrad RMDK), recently joined forces with sister company Altrad Coffrage & Etaiement to reinforce Pont des Ecrevisses, a bridge on the RN 3 in Saint-Claude, Guadeloupe. The reinforcement was necessary to re-establish the bridge's structural integrity after its piers were weakened by storm Fiona a few years ago.

The challenge

Pont des Ecrevisses is one of the primary bridges used in Guadeloupe. It plays a crucial role in the island's transportation network, linking vital areas and facilitating the movement of goods and people. As the bridge's piers were built in the 1950s, they had been subject to corrosion from environmental factors and further damaged by the storm. This had forced the implementation of traffic restrictions that disrupted the daily lives of local residents.

To make the bridge safe to use again, Région Guadeloupe commissioned the contracting authority Grands Travaux Antillais and Routes de Guadeloupe to carry out reinforcement work to make the bridge safe as quickly as possible. They enlisted Altrad RMDK and Altrad Coffrage & Etaiement to specify and install a temporary works solution. A temporary works solution can be defined as "any structure erected to support the permanent works until the permanent works is strong enough to support itself." Even though this bridge was deemed self-supporting, the need for traffic restrictions meant that the description was still accurate.

The solution

The 'A' frame design of the structure posed a challenge, as the bridge was supported by columns that were sloping, and strict regulations prohibited any interventions that could potentially exacerbate the existing damage.

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Altrad RMDK engineers suggested implementing a single flat concrete foundation. This approach not only avoided the risk of intensifying the damage, but also simplified the erection process by providing a stable base for the bridge components. The flat foundation ensured uniform support, allowing vehicles, loads and people to successfully navigate across the bridge.

Given the substantial weight of the bridge deck, totalling approximately 750 tonnes, the project team then deployed two 12m-high Megashor and Slimshor shoring bents or towers as a crucial structural support element. The Megashor ultra-heavy-duty modular shoring and propping system is renowned for its robust load-bearing capabilities, and was strategically positioned to provide reliable support for the various components, distributing the weight evenly across the bridge structure.

Load monitoring

A ground-breaking element to this project was the introduction of advanced load monitoring technology known as e-Pins. Altrad RMDK's engineers suggested they be used due to the climate of the environment, with temperatures doubling throughout the day meaning the load on the beam was heavily affected by thermal expansion.

Traditionally deployed in excavations, this was the first time e-Pins had been utilised for an above-ground project, enabling the monitoring of thermal load variations and signalling any fluctuations. This allowed for continuous web monitoring of the shoring, and all parties involved within the project were able to remotely track the status of loads, facilitating real-time data collection and analysis to ensure optimal performance and safety.

The prop brace pins also featured 3G connectivity and autonomous operation powered by solar energy. This integration enabled seamless communication and data transmission, which would inform teams of load dynamics and shoring performance irrespective of location or time zone constraints.

The project has not only bolstered the bridge's structural integrity and load-bearing capacity but also set new benchmarks for resilience and safety in infrastructure development. Following conclusive load tests in January 2024, the traffic restrictions were lifted and the structure is once again fully operational for the 3000 or so people living in the area, until the Pont des Ecrevisses is eventually rebuilt in the future.