Connecting communities with all-modular all-steel bridging solutions

Bridging Case Study

Client: Dawnus International Ltd
Solution: Mabey Compact 200™ with Bolt-A-Bin® abutments and SmartEdge®

Mount Coffee Hydropower Plant, Liberia
The Challenge
Mount Coffee Hydropower Plant is located approximately 27 kilometres northeast of Monrovia, Liberia. Built in the 1960s and destroyed during the Civil War in Liberia in the 1990’s, the government commissioned the rehabilitation of the facility to provide electricity for the country in 2014.

Dawnus International Ltd was contracted to do the main civil works for the project. One of the challenges they encountered was that during the time when the Hydropower Plant had been out of use, remote communities in the surrounding areas had created access routes where the reservoir had previously been located. This meant that, once the reservoir was operational again, these access routes would become inaccessible and communities would become cut-off once again.

To overcome this, it was decided that a pedestrian bridge would be an ideal solution for one of the locations. The new bridge would provide a safe access point and help ensure that the local community, which is dependent on trade in fishing, farming and the production of charcoal, was not cut-off once the new Hydropower Plant was opened.

The Solution
The Mabey Compact 200™, a pre-engineered modular steel bridge, combined with a modular steel abutment system was chosen as the solution for The Mount Hydropower Plant Pedestrian Bridge. This was the first time that a solution of this kind had been used in Africa. The modular nature of the solution means that the bridge can be constructed quickly, safely and efficiently, even in remote locations with poor and unstable ground.

Timing was critical, as work on the plant could not commence until safe access had been secured for local residents. A lightweight modular bridge abutment system, Bolt-A-Bin®, developed by AIL in Canada, was selected to improve speed of installation and minimise on-site works. The Bolt-A-Bin® consists of a strong cellular corrugated metal retaining wall into which a compacted mass of local granular soil can be compacted to form a permanent abutment. Easy and quick to assemble by hand on-site, there is no need for concrete pouring, saving money on both material and installation. The components are also lightweight and quick and easy to assemble by hand on-site, delivering outstanding versatility, especially in remote locations, and minimising the impact of on-site works on the environment.

The steel Bolt-A-Bin® abutments were built first, bolted together and filled with local soil, compacted in layers, to provide the strong substructure onto which the bridge could be installed. The two span, 52 metre long Mabey Compact 200™ was then launched onto the Bolt-A-Bin® abutments on rollers, and jacked down onto its bearings.

The Result
The resulting Mount Coffee Hydropower Plant Pedestrian Bridge, which also features Mabey SmartEdge® side panels, was constructed in just four days. It replaces an unstable and unsafe bamboo bridge previously used by the local community to cross the river. It also provides a safer and larger access route, helping the local community to continue to get their goods across to the market easily, once the Hydropower Plant is re-opened again.

The use of this all-modular all-steel bridge and abutment solution is the first of its kind to be used in Africa and is set to transform bridge construction across the Continent.

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