



# Gangra Haul Road, Liberia

PDLA20

In 2016/17 Dawnus commenced works at the Arcelor Mittal iron ore mine in Nimba County, Liberia. The contract involved the construction of a 13km haul road to access a new pit at Gangra, which will produce 5Mt of ore per annum over the next five years.

The road traversed a short section of low lying swamp land before climbing 350m up through very steep terrain to reach the peak of the mountain some. The sheer side slopes were a challenge to the site team particularly in wet conditions. The 1.2 million cubic metres of earthworks was optimised by Dawnus' engineering team, taking into account gradients and curvatures suitable for 50T mining trucks. Trial pits were excavated along the alignment to identify areas of suitable laterite for the lower pavement layers with testing undertaken by the Dawnus on site laboratory. The bulk earthworks was undertaken by a fleet of 40T ADT's, 50T excavators, dozers, compactors and graders. Final layer works were precisely laid by machine control GPS dozers and graders ensuring tight tolerances were achieved and aggregate volumes were minimised.

Areas of canga and boulder fields were removed by the quarrying team using a combination of traditional drill and blast and ripping with D9's. Along the length of the haul road 2000m of corrugated steel pipe arch culverts were installed ranging in size from 1.2m diameter to a 7m wide arch structure. 80,000T of drainage and gabion stone, rip rap, concrete aggregates and the wearing course were all produced by Dawnus at a local abandoned quarry site.

Due to the sensitive nature of the site Dawnus had a full time dedicated environmental supervisor throughout the project dealing with temporary and permanent sediment control and run off and the re-vegetation of embankment slopes and borrow areas. Other important environmental works involved the relocation of a colony of bats, which involved the construction of two interconnecting tunnels, 2m wide by 2m in height, comprised of reinforced concrete 100m in length. Due to the remote location of the bat roost the structure was precast in 2m long box sections in two halves to allow for placement/ craneage with an excavator.

A 50m span modular bailey bridge with associated concrete foundations and abutments was also constructed on the project to cross the Dayea river.

Despite having a local workforce of 300 operatives working day and night shifts the contract was undertaken with no lost time incidents.

**Client:** Arcelor Mittal

**Value:** \$12,700,000

**Duration:** 26 weeks