



Big Road for RAINBOW CITY



A brand new city is being created in the lush virgin jungle of Indonesia's East Kalimantan province by the new regional government in Kutai Timur, Indonesia.

After decentralisation of provincial government operations two years ago, the newly formed Kutai Timur authority, located 170 Km north-east of the regional capital Samarinda, is establishing a new administration centre for itself.

Surrounded on three sides by dense jungle with the remaining easterly side offering panoramic views of the distant Makasar Strait, the appropriately named Rainbow Hill City is certainly a unique setting.

Having decided that the existing infrastructure of capital town, Sangata, was unsuitable, the government drew up plans for the administration complex, employing several thousand people, on 250 hectares of nearby Rainbow Hill.

The project is the huge undertaking and access to its numerous ministry buildings located amongst the step jungle clad hill will be via a 22 Km arterial road system which is currently being constructed.

Specialist road contractor PT Conbloc Infratecno was awarded the US\$ 5.2 million design and build project in the middle of 2002, with operations starting towards the end of the year.

Such is the pioneering commitment of Conbloc in the field of pavement technology that it took the far reaching decision in 1997 to seek an alternative to the traditional road building techniques used in Indonesia.

A lack of stone and aggregate sources in a number of Indonesia's 31 Provinces, and in virtually the whole of East Kalimantan, meant road builders were forced to import aggregate for sub base and base material by barge from neighbouring island, Sulawesi, a costly exercise. Delivering were also erratic, and it created a massive potential environmental impact on source marginal material.

Identifying the difficulties in constructing the road using imported material, and learning from long experience working with stabilised materials, Conbloc sought an opportunity to utilise the existing marginal material (called sandy clay) by stabilising it with cement.

An in situ stabilising machine, a wirgen WR2500 was mobilised to East Kalimantan to prepare the road layers utilising local materials. The machine has been used for road improvement and the road rehabilitation programme by recycling the existing road materials and also to build a new road.



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Success with the stabilised material concept and pavement recycling, means the local government has increased the portion of road that can be constructed employing this technology.

Conbloc took delivery of its first Wirtgen WR2500 cold recycling machine, the first plant of its type directly imported into Indonesia, and further Wirtgen units, a second WR2500 and 2100 DC cold milling machine have subsequently been delivered.

The project at Rainbow Hill City involves the construction of 22 Km of dual and single lane carriageway. In addition to the main construction works, Conbloc are responsible for providing drainage, lighting and other associated road services.

Following clearing of the jungle, grading and initial compacting of the existing soil, Conbloc undertake sampling and testing of the sub-grade in their in house laboratory. These samples are then submitted to the project consultant for approval.

An average of 300 mm thick cement stabilised sub-base layer is then developed. Bulk cement carriers spread a pre-determined layer of cement ahead of the cold recycling unit.

Preceded by and connected to a bulk water tanker, the Wirtgen WR2500 then traverses each 75m-long pass section. The machine stabilises to a maximum depth of 500mm of compacted soil and mixes with the cement and a microprocessor controlled water feed. The treated material is laid between the machine's rear wheels ready for compaction. The most important element during the soil stabilisation process is to ensure the water can be added to a certain quantity to bring the soil mixture in the range of optimum moisture content. Operating a fleet of Hamm combination and deadweight rollers, the treated materials is subject to an initial compaction of six passes using a Hamm padfoot combination vibratory roller.

Following trimming of the treated surface, a further six final vibratory compaction passes are made with the Hamm 222 DS. After curing the surface is chip sealed and topped with a 50mm layer of hot mix asphalt.

Conbloc is currently stabilising an average of 4.000m² per day in a ten-hour single shift, six day/week basis and anticipate completion by June this year as required by the contract.

Established in 1974, Conbloc Infratecno has over the past 29 years, been a willing and innovative partner in the advancement of pavement and road formation in Indonesia. The pavement recycling technology introduced in 1997 in Indonesia by Conbloc Indonesia has now become a trend in the country. The soil cement technology, which had been 'judged' as unsuccessful technology in Indonesia, has been successfully relaunched with the application for the Wirtgen WR2500, mixing the soil and cement homogeneously and accurately controlling the water content during mixing. (World Highways, June 2003)