Road Pavement and Surfaces
№ 444

Ajinomoto Factory

Negeri Sembilan, Malaysia

Providing Stability for Ajinomoto Factory

Tensar's mechanically stabilised layer (MSL) system gave the contractor an edge by delivering longer pavement life whilst minimising unsuitable material disposal and replacement.

Benefits

78% material reduction and accelerated construction time
due to reduced removal and replacement of unsuitable material

6x improvement in trafficking capacity
and reduced long-term maintenance cost

50% reduction in carbon mission
and reduced earthwork activities

CLIENT'S CHALLENGE

The contractor was tasked with constructing a pavement for a factory loading bay. Soft subgrade was discovered prior to construction which meant the existing pavement design was unable to achieve the targeted design traffic without ground treatment. Conventional ground treatment would require at least 2m of removal and replacement (R&R) of unsuitable material prior to pavement construction.

TENSAR SOLUTION

The consultant reached out to Tensar for a more economical and efficient alternative solution. Two layers of Tensar TriAx® stabilisation geogrid were proposed to stabilise the sub-base and base course materials, over a 300mm thick capping layer. This both reduced the amount of excavation required and increased the pavement design.

PROJECT BACKGROUND

A new factory was to be built in Labu, Negeri Sembilan, in an area surrounded by oil palm estates. High traffic volume was anticipated due to the transportation of goods. Therefore, a target traffic load of two million standard axle passes (ESAL's) was specified by the consultant for the loading bay area of the factory. Unexpectedly poor subsoil conditions were encountered with an estimated subgrade CBR of 0.5% extending approximately 2m deep, construction activities became delayed. Initial calculations estimated that only 15,000 ESALs of life could be achieved without removal and replacement (R&R) of unsuitable material.

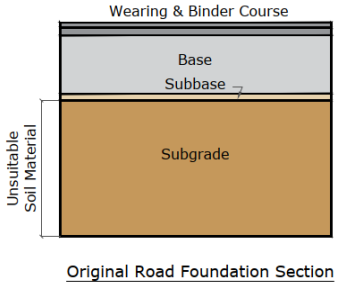
Even R&R operations to a depth of 2m would not achieve the required traffic targets and so Tensar's proposal was adopted to introduce two mechanically stabilised layers incorporating Tensar TriAx® geogrid to act as base and sub-base respectively over a capping layer of 300mm placed directly over the weak subgrade. Tensar's designers used proprietary pavement analysis software including mechanistic-empirical methods to model the whole pavement and determine expected performance. This showed that the traffic targets could be reached and exceeded with reduced earthwork activities. This helped the contractor to complete on time without compromising pavement performance.

Main contractor
Satujaya Sdn Bhd

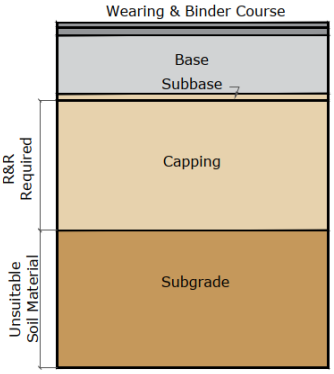
Consultant
Geo-Excel Consultants Sdn Bhd

Client
Ajinomoto Malaysia

Neither the original or R&R proposal would achieve project traffic requirements

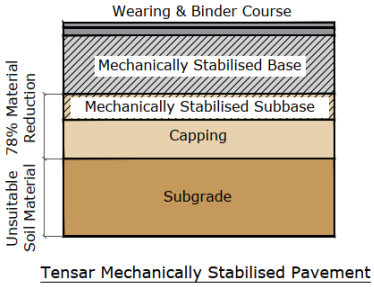


Original Road Foundation Section



Revised Section w/ Ground Treatment

Tensar mechanically stabilised pavement provided a 6x improvement in trafficking capacity



Tensar Mechanically Stabilised Pavement

