

AustStab Construction Tips

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Profilers versus stabilisers

Introduction

The development of insitu stabilisation was from the use of rippers and stabilisers to “powerful” reclaimers allowing the pulverisation and mixing to occur in one to two processes.

Reclaimers and stabilisers are manufactured with the mixing box located centrally as shown in Figure 1. These purpose built machines incorporate special rotors aimed at mixing the material within the mixing hood. The use of agricultural equipment, profilers, rotary hoes and graders are not substitutes for insitu stabilising as they tend to have very poor mixing properties that result in cracking of the pavement.



Figure 1 Conventional-sized reclaimer/stabiliser.

Large reclaimer/stabilisers with an engine power output exceeding 400hp have the ability to pulverise existing asphalt to depths of about 100-mm and incorporate the asphalt in the final mix. In fact, the existing asphalt in many roads is 20 to 50 mm in thickness and contains very good aggregates to enhance the strength of the stabilised layer.

Profilers

Standard and modified profilers (see Figure 2) cannot be used to stabilise pavement materials as profiler and stabiliser rotors are completely different. The profiler has bullet type teeth (see Figure 3) and a drum whereas a stabiliser has wide shape teeth on long legs such that the material is mixed (see Figure 4).

So far the results from a profiler have been poor and the outcome is “chunks” of cement aggregate and localised failure of the pavement.



Figure 2 View of a typical profiler.

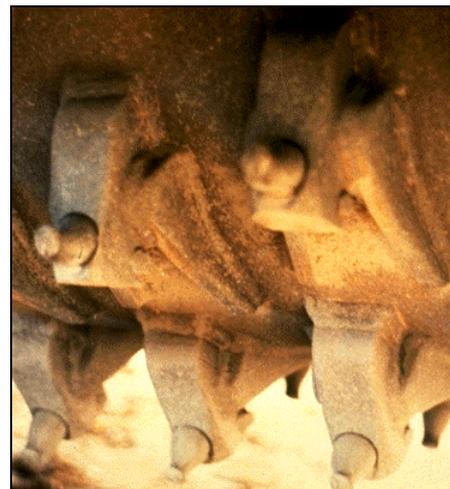


Figure 3 Close-up view of bullet-type teeth of profiler.

Stabilisers

The bullet tooth on a profiler has the ability to pulverise existing asphalt and pavement materials. The long wide shape teeth on the stabiliser (see Figure 4) cannot cut and reclaim compacted material. The rotor of the stabiliser will only mix the binder with the pulverised pavement material.



Figure 4 View of teeth for stabiliser.

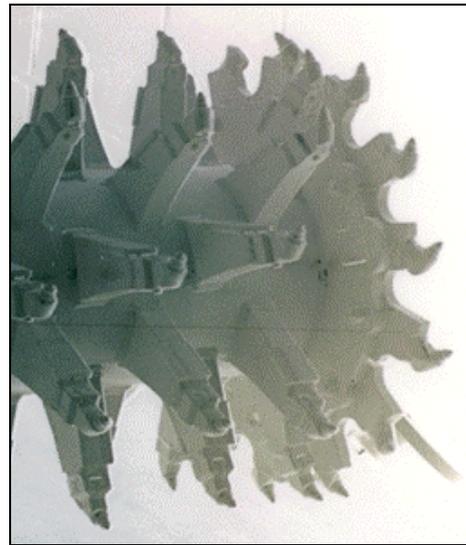


Figure 6 View of teeth for reclaimer/stabiliser.

Reclaimers/Stabilisers

The 1990s saw the first introduction of the reclaimer and stabiliser, a machine that could both reclaim and stabilise with the same rotor (see Figure 5).



Figure 5 View of common reclaimer and stabiliser with 500hp engine.

The rotors on a reclaimer/stabiliser consists of bullet shape teeth on long legs design to mix the pulverised pavement material (see Figure 6).

These machines have the ability to reclaim existing pavement materials to a depth of 500 mm. However, the material may be difficult to compact to depths greater than 400 mm. Modern CMI and Wirtgen machines are now available as both reclaimer and stabiliser.

Bibliography

Web Sites

AustStab home page
<http://www.auststab.com.au>
CMI home page
<http://www.cmicorp.com>
Wirtgen home page
<http://www.wirtgen.de>

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