Council Dust Control Trial

Council Rural Council Queensland

19 May 2015

Preamble

In early April 2015, xxxxxxx, the Rural Council Maintenance Engineer advised that they would like to do a follow up trial with our product over a 400 metre stretch of the xxxxx Road south of the town of xxxxxxxx. This section of road had previously been treated in November 2014 but had been damaged by heavy rains and the trial outcome was not conclusive. In spite of the damage caused by the rains there were stretches of the road still in reasonable condition and this was where our product had been applied. The competitor products were deemed to be unsuitable.

I requested that two water tankers must be made available to prevent the delay in applying product which we experienced at the last trial. This delay, during the heat of the day, resulted in the DustSuppresSOR product drying out and negating the benefit of applying the product before the RoadseaLOR application.

Two tankers were made available and the trial date was confirmed for the Tuesday 19th May.

Introduction

Again the focus of this trial was to demonstrate the ease of application and effectiveness of SIS dust control and road sealor product for use on gravel road surfaces.

The following key issues were to be highlighted

- 1. Simple preparation of the road surface prior to treatment
- 2. Ease of product application
- 3. Speed of application
- 4. Minimal equipment requirement
- 5. Product safety and handling
- 6. Turnaround time
- 7. Cost

Body of Report

The basis for dust control is a simple two step process being:

- 1. prewet the road surface with DustSuppreSOR
- 2. seal the road with RoadSeaLOR

In order to effectively achieve this treatment it is essential that the gravel road surface be suitably prepared in that the

- 1. surface is well compacted
- 2. surface is even and has no corrugations
- 3. loose material has been swept away
- 4. surface is free of grass and weeds

The location of the trial was again on the the xxxxxx Road south of the town of xxxxxxx. The road was well prepared with new material and the Council team acknowledged that they had used inferior road material during the last trial (very high clay content and PI of 28). The surface was now more gravely and sandy although there was still a fair bit of clay evident.

The preparation of the road was as I had requested and no problems were therefore envisaged. The weather on the day of the trial was cool, overcast with a moderate breeze and temperature of 23 C. During the day the temperature would vary as did the cloud cover and by the afternoon the wind had dropped off and temperatures had dropped. The cooler weather resulted in a longer drying time between product applications.



View of demo road looking west towards xxxxx Mine and then back towards main road The white marker indicated the required 6 m width to be covered

Application Requirement

In light of the previous trial experience I determined that the road needed to be well wetted with the DustSuppresSOR and once complete to follow up as soon as possible with application of the RoadSeaLOR product

The process for applying the product was to be as follows:

- Two to three applications of our DustSuppresSOR product in order to thoroughly pre-wet the surface to improve absorption of the RoadSeaLOR product.
- Two applications of 7.5% RoadSeaLOR giving a total of a 15% application. I intended to do a third application to give us some 22% application.

Preperation Process

1. Prepare the first tanker for the operation by filling with 10000 liters of water which was estimated as being sufficient for several applications of DustSuppresSOR.

For this application add 10 liters of DustSuppresSOR to the 10000 liters and drive for a short distance to agitate and mix the product.

We also did a spray test in the yard to evaluate the spray boom efficiency.

Driver was observed doing figure 8 in the yard then driving from yard to demo site over a distance of approx 4 kms. The DustSuppresSOR was thoroughly mixed.



Added 10 litres DustSuppresSOR to 10000 litres water

2. Prepare the second tanker by filling with 7000 litres of water to which was added 520 litres of RoadSeaLOR.

Note we only had 520 litres of product on site

The tanker spray boom was set to standard revolutions.

The RoadSeaLOR was again added to the tanker by hand but this time we were prepared in that:

- We had the use of two tankers
- We were starting earlier in the day as all planning had been done beforehand
- Were not constrained by time
- Were able to rinse out product residue left in the drums

This will now give us a 7.5% mix with water / RoadSeaLOR. The product was thoroughly mixed by the time the truck had driven from the yard to the demo site.



520 litres of RoadSeaLOR being added to the tanker holding 7000 litres

Application Process

We were on site to start the application process at approx 1030 hrs.

DustSuppresSOR

1. Apply the FIRST application of water and DustSuppresSOR in a single run to wet the soil. As the spray boom was only approx 3,5 metres wide a run was done on both sides of the road in order to cover the full 6 metre width.

The first run was a bit too fast and too light



First application too light and too fast

2. A SECOND application was done at a heavier and slower application



Second application now heavier and a lot slower speed



3. We allowed the product to soak into the road surface and I decided to do a THIRD and then a FOURTH application to ensure that the product had penetrated the road surface



Third application heading towards main road

We finished applying the DustsuppresSOR at approx 11.00 hrs having used approx 6000 litres. The process took approx 1 hour to complete and included time for the product to soak into the road surface and avoid any puddling effect.

The road surface was well wetted down to a depth beyond 30 mm.

It could be noted that three applications would probably have been sufficient as I then experienced delays in the RoadSeaLOR soaking into the road surface maybe because the saturation level was too high.



Waiting for the DustsuppresSOR to be absorbed prior to application of RoadSeaLOR

We then waited a further 15 minutes before applying the RoadSeaLOR

ROADSEALOR

1.FIRST application was done by driving down the middle of the road with the pump set at a wide spray mark. It was observed that whilst the middle section was getting a good dose, the outer margins were not being covered effectively. Started at approx 1230 hrs



Road after RoadSeaLOR was applied to centre



Product pooling and slowly being absorbed

2. SECOND application done by applying product down the sides of the road. Started at approx 1245 hrs



The application was allowed to soak in and no pools remained on the surface

A 15% application has now been applied



The road surface after two applications

3. THIRD application was applied by again spraying down the sides of the road



The road surface after three applications

We have now applied a 22 % application and finished at approx 1330 hrs

RoadSeaLOR appears to be very thick on third application and takes time to soak into the road surface. The centre of the road for a good 2.5 m on either side has received a good dosing. This is where the traffic will run in the main. Sides are also well soaked



The road surface slowly absorbing the RoadSeaLOR



Drying time prior to using the roller to compact the surface and remove excess moisture Started using roller at approx 1500 hrs



Roller application was extremely beneficial in building a hard and compact surface and removing excessive moisture. The road was now being used by traffic who were allowed up the centre part and this was also helping to compact the surface.



The product in the first photo has soaked well into the road surface as indicated by the depth of the marker being approx 30 mm whereas in the second photo, taken at the first trial in November 2014, shows limited penetration into a harder surface.

Evaluation

The overriding principle of our product offer is to ensure that the main dust control product, RoadSeaLOR, is absorbed into the prepared road surface as much as possible so that it does not just form a layer on the surface.

If the road is very dry, then the solution that is applied might be absorbed into just the top few mm of the road surface and be insufficient to penetrate down into the road bed. I am sure that this was an issue on the previous trial for the various reasons already noted. For this reason we pre-wet the road, using DustSuppreSOR to help the water soak in and penetrate better. For this trial I did four applications and found that probably three would have been sufficient.

1. The standard recommended dosage rate of DustSuppresSOR is 11itre per 2 000litres of water and applied at 11itre per square meter.

In the case of this trial we decanted 10 litres of DustSuppresSOR into 10000 litres of water. The area to be covered was 2400 square meters with the intention of using approximately 7000 - 8000 litres being three applications to ensure a thorough soaking of the road. I did in fact do four applications and used approx 6000 litres. The remainder was used to spray the rest of the road for dust control.

2. RoadSeaLOR should ideally be applied in two passes so that the first application soaks in and penetrates, and then the second application can consolidate. Being a trial I was prepared to do third application if there was enough product available

Application rate for the two applications should be somewhere between 7.5% to10%.

If we apply at 10% at 11 per square meter this means that 11 will be spread over 10m2.

Therefore to do 400 metres at 6 m width being 2400m2 you need 240litres of RoadSeaLOR. So two applications at 10% will require 480litres.

If we apply 2 applications at 7.5% this will require 360litres for 2400m2.

So our recommended application would be between 360litres and 480litres per 400 metres

Application rates may vary depending on the preparation of the road surface, soil type, traffic volumes and traffic type etc. The different conditions experienced at xxxxxxxx, comparing November to June, are remarkable and it can be difficult to have a standard application formulae / method.

The lifespan of the treated road surface will depend on many variables including the preparation of the road surface, soil type, traffic volumes and traffic type etc. Straight road sections will have a longer lifespan whilst greater wear and tear will occur on curves and corners and sections where heaving breaking takes place. However the product is easy to reapply in these areas without having to rework the road surface. We would expect a lifespan of between 2 to 5 years and in many cases we have exceeded this time frame.

Road should always be swept to remove loose material before application since stones gravel etc prevent the product reaching the road base and soaking into the road. So you get well coated stones and no treatment of the road. Using the roller after the final application helped compact the road and bind all the surface material into the road bed.