



Friesland Foods Domo

FRIESLAND FOODS DOMO

Friesland Foods Domo chose C-Fix for their liquid tight, milk and acid resistant floors.



The project at Friesland Foods Domo:

Every 24 hours a number of tank trucks – weighing an average of 45 tons – come to unload on 8 dock lanes. Those tanks are filled with (liquid) whey and must be accurately positioned on the dock lanes. The positioning is achieved by the slow forward and reverse maneuvering of the trucks. Additional fact is that most trucks have driven about 60 km or more from the nearest cheese factory, and have therefore very hot tires, especially in the summer. The length of the loading area is approximately 20 meters by 3 meters wide.

What were Friesland Foods Domo's needs and requirements?

A better solution with lower maintenance costs for their unilaterally and heavily loaded dock lanes. At this point, much track and groove shaping had occurred due to the continuous intense and heavily loaded traffic. The previous constructions had high maintenance costs.

Original construction composition:

The old constructions varied from layers of modified SMA asphalt types to Dense Asphalt Concrete (DAC), but all failed due to deformation. Below this layer there was a concrete construction, of a conventional road grade concrete.

Problem definitions at Friesland Foods Domo:

Due to the high and unilateral point loads from the heavy milk tank trucks (the alignment and positioning of the rise tanks on the trucks) the deck layer had to be replaced frequently. The deck layer was not acid-resistant; whey contains a lot of milk acids and it is not possible for the truck drivers to avoid spilling. This results in the deck layer deteriorating quickly. The acid-resistance was not a regulation from an environmental point of view, but the milk acid was not supposed to make contact with the concrete layer. "This can cause the construction to deteriorate", Gerard Oude Lansink, Manager Research & Quality Guidance of Reef Infra BV (the executing contractor), explains. The combination of rutting and the fact that the floor was not acid resistant made the problems worse. "Due to the heavy use of the tank trucks there was deformation in the asphalt. Grooves were progressively made worse. In these grooves, 'pools' of whey are created. Under the influence of the sun milk acids

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CASE STUDY

become even more aggressive to the surface and finally it will also affect the under layer", says Oude Lansink.

The milk acid damaged all the asphalt types used so far. "In fact, every construction was damaged", emphasizes Oude Lansink. If the deck layer was not repaired or renewed rapidly, the concrete layer underneath would get severely damaged, which would lead to concrete pulverization – the concrete for all intents and purposes explodes. The company could not afford to have the dock lanes out of order for too long or with such frequency.

Considerations for Friesland Foods Domo:

Friesland Foods Domo considered a range of possible solutions for their floor:

- Concrete or concrete with a coating;
- Improve the asphalt construction, apply more dense asphalt types,
- C-Fix.

Concrete requires higher financial investments and permanent high maintenance costs. "Concrete was not serious option, because this material would be damaged badly by milk acids", explains Oude Lansink. A coating applied on the concrete would overcome that problem, but "if such a floor leads to damage, this means that the concrete can explode, therefore that was no option either", Meije Lammers, Manager Maintenance at Friesland Food Domo, explains.

In light of the constantly ongoing business at Borculo, the rapid construction of floors with C-Fix was also an important consideration. "Another disadvantage of concrete was that you would lose about six weeks per unloading dock for hardening the floor and then putting a coating on it", says Lammers.

Improving the asphalt construction also proved to be a weak solution as the same issues continued to exist. "Actually, we had been in search of a good solution to keep the costs under control for about five years", Lammers says.

Reef Infra, with which Friesland Foods Domo has had a maintenance contract for many years, proposed to apply C-Fix. Friesland Foods Domo was open to an innovative solution.

The solution for the dock lanes?

A stable surface layer with C-Fix, which is strong, liquid tight and fully acid resistant. Meije Lammers adds: "If you compare the investments costs of concrete and C-Fix, they would have been much higher if we had chosen concrete."

Mix and construction design:

Mixture type: C-Fix/carbon asphalt concrete 0-16, acid proof and 9 cm thick. Below the C-Fix are both the existing concrete layers as well as 2 layers of STAB 0-22, 16 cm.

Advantages for Friesland Foods Domo by applying C-Fix:

- No more rutting/deformation caused by the heavy tank trucks.
- Resistance to acids, so there will be no more deterioration of the deck layer by the milk acids. Engineer Marc Bergijk of ABV Haukes Inspection Services: "Carbon Asphalt mixes with C-Fix as binder amply meet liquid tightness criteria".
- The floor is more cost-effective; besides lower investments to apply the floor ("Concrete would have cost six times as much," said Lammers), it has significantly lower maintenance costs. The floors were laid in October 2003 and now, after three years, still perform very well. "The maintenance costs have reduced a lot and we expect that the floors will last much longer than the old ones", says Lammers. This offers possibilities for Friesland Foods Domo to use the maintenance costs for other purposes. "Now they can do much more with the



same budget, even on other places where company floors may show rutting, but are not affected yet”, observes Oude Lansink.

- Very quickly usable after application (after cooling C-Fix is ready to use), which is a clear advantage and contrast to concrete. Lammers: “It cures quickly, so you can have trucks driving over it in no time after application”.
- Better ageing (corrosion) and fatigue performance. Besides this, the under laying concrete construction is now protected a lot better, guaranteeing integrity and stability of the total construction.
- The CO₂-emission reduction that is gained through using C-Fix. “This is a plus”, Lammers feels.
- C-Fix doesn’t leave black traces on the road; there is no bitumen loss. “Once it is being laid, you can’t affect it,” explains Gerard Oude Lansink.

Information about the customer, Friesland Foods Domo:

Friesland Foods Domo (an operating company of Royal Friesland Foods) develops, produces and sells high value ingredients and semi manufactured products based on whey and milk ingredients for the food-, child nutrients- and pharmaceutical industry. In Borculo, one of the product locations of Friesland Foods Domo, the whey comes in liquid form by means of large tank cars. The liquid whey is further processed to several high-quality whey products, such as whey-egg white concentrates and lactose.

Information about the contractor, Reef Infra B.V.:

Reef has been active in the infrastructure construction (‘GWW’) market for 100 years. The activities of Reef have been spread over the whole country, with a focus on the Eastern region in the Netherlands. They are well known as a reliable family company and, with their own engineering bureau, are able to anticipate and build on recent developments. Combination of road construction projects and multi-year maintenance contracts are just some of these types of developments. Reef has worked with C-Fix for a number of years and completed many projects. The industrial floor at Borculo is just one of those projects.

Other projects of Reef Infra B.V. with C-Fix:

- Bolk Transport, Almelo, industrial floor for heavy transport/loading.
- Friese Afvalsturing (Omrin), non-industrial waste deposit area in Heereveen, Leeuwarden, Sneek and Stiens.
- Heerenveen, transport route of a cement factory.
- Gemeente Stadskanaal, bicycle path.

For additional information about Reef, please check: www.reef-infra.com

This case study could not have been made without:

- Meije Lammers of Friesland Foods Domo.
- Gerard Oude Lansink of Reef Infra B.V.
- Marc Bergijk of ABV Haukes Inspectiediensten.