



Warehouse Concrete Slab and Joint Repair

Background

Slab movement is a problem that, if not dealt with, will gradually create increasing amount of problems - financial, safety, etc. So far there was no single effective solution for that problem except cutting out old and pouring a new slab part. Different other techniques have advantages and disadvantages but there are considerable downsides. I realized that using either slab lifting foam or joint stabilizers won't guarantee stable results.

The foam itself may give a good result for some time but as the joints still separate adjacent slabs, it is a matter of time when heavy forklifts force the slabs move again. The question is what do you do then - you cannot perpetually drill another set of holes and pump another load of foam.

Using simply joint stabilizers would join two slabs together and level a surface but the up and down movement would not disappear. The result of that would eventually be gradual cracking around a cylinder and at some point even potential breakdown of some cylinders. Also customer satisfaction cannot be guaranteed as the spalling around cylinders would be an issue and a future cost. Then I realized that combining those two products would give result where one supports the other an vice versa. The foam does not let the slabs move up and down and cylinders keep both slabs together and force them to act as one. The forklift load would be divided between two slabs as one approaches a joint. The foam under a next slab would also support the previous slab when a forklift approaches a joint.

We have monitored fixed areas and so far there is not a single problem with them. This involves over 200 cylinders and foam on 5 sites in Estonia and Latvia.

1. Lasita Maja (a log house producer)

The most difficult site so far where the initial reason was curling due to inappropriate concrete lying methods in a very cold weather. The 6x6m slabs were vertically unstable on most of the fork lift traffic area. They use large 7 ton forklifts. In some cases one of the adjacent slabs was moving, in other cases both. In some areas the curled corners had broken and fallen down but one of the 4 adjacent corners was still up. Or the was a situation contrary to that where one corner was down and others curled upwards. As we did not have a high volume foam pump then we used a 7 ton forklift and special arrangements to rise and fix the height of a broken slab corner before foaming underneath. The vertical difference or movement between slabs was 2-8mm and the problem was escalating. Many joints were severely damaged and they realized the abnormally high cost of servicing forklift axles originates from floor problems. Also forklift drivers had to slow down in many areas which started to affect their output. As the factory already runs 24/7, they analyze everything that restrains production and output.

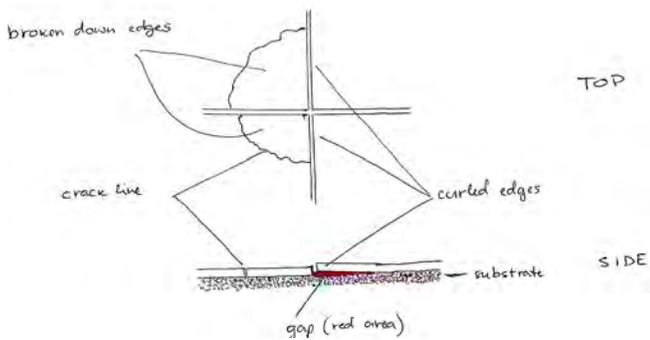
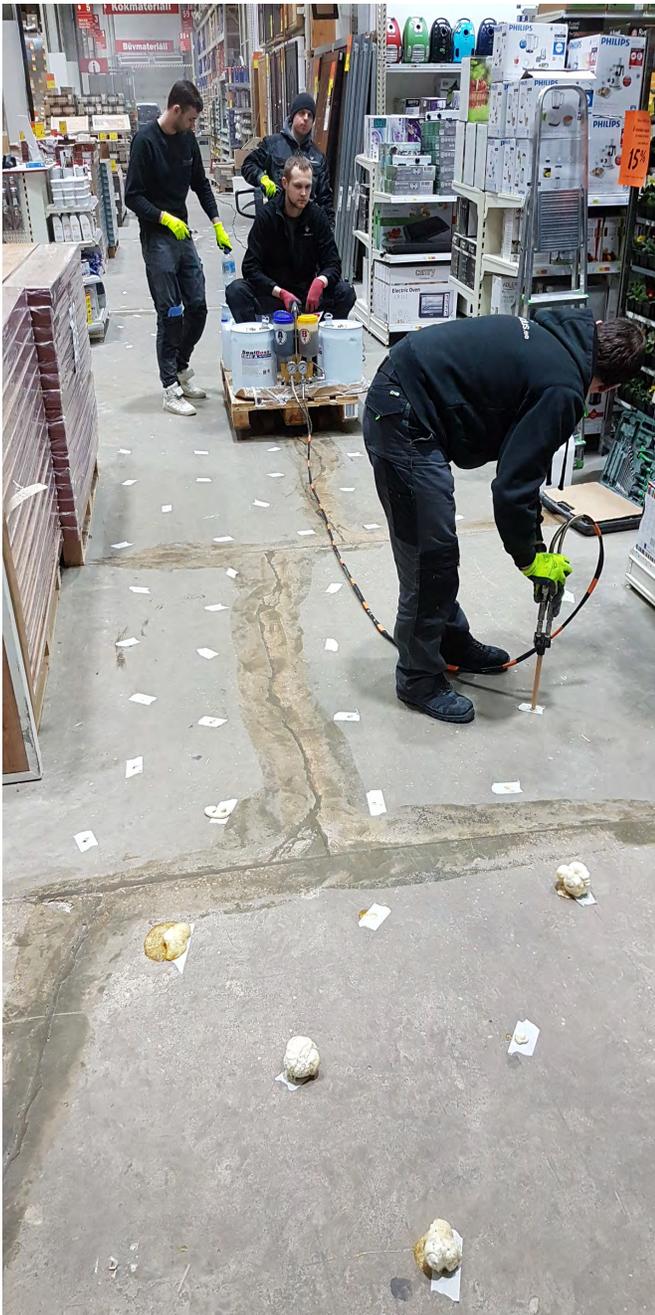
Some pics of the final result. (foam, cylinders, spall repair, joint reconstruction).

I suggested them to invest into both foam and cylinder installation. The cost of foaming a 300m² area (consisting of 16 smaller areas) and installing 44 cylinders + reconstructing joint edges and refilling all the joints with QF 6500 cost about 13000€+VAT. The minimum team for doing a foaming job is 3 men: a drill/pump operator, a gunman and a pallet driver/re-filler of hoppers. When you install cylinders at the same time you need 2 more men: core drill operator and a cylinder installer/supporting services man.

2. DEPO (A large "Home Depot style" DIY store in Riga, Latvia)

They had floating slabs in both primary aisles which had caused forklift accidents and negative feedback from customers. The joint areas were repaired with epoxy but everything cracked and broke down very quickly again as the slabs were not supported underneath. We fixed the floor using the same technique as in Lasita Maja. Most slab edges required grinding down before installation of cylinders. Every joint was foamed, cylinders were installed according to a situation on an actual joint. We marked drilling spots with a distinctive tape, drilled holes through it, vacuumed, also foamed through it and finally, when cured, cut off the remains of foam, drilled a 2cm (less than an inch) deep holes into a foam, filled with 6500 (cartridge), cut off the cap and went for a coffee. The tape also acts as a protective layer between a floor and a foam (no stains, applicable in design-sensitive areas).







SealBoss® 6060 / 6500 QuickFix 1640 SlabLifter Foam



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