

Sweden Case Study

Deep Foamjection™



Problem

A two year old home located in Sweden settled only two years after construction. The two story home was built as a slab on grade with a thickened edge. Poor compaction of the fill was determined to be the source of the settling. The home owners noticed the doors were sticking, slight drywall cracks were appearing and they could physically notice the sloping in one side of the home. The front of the home had the largest settling at 3.5 inches. The left side of the home was settled around 2.5 inches. They received quotes for many foundation repair options including Deep Foamjection™. Deep Foamjection™ involves injecting a material mixture into depths of weak soil that expands into foam to stabilize and potentially lift the slab.

Solution

The home owners did not like the idea of excavating around the home so they chose the non-invasive option of Deep Foamjection™.

There were many obstacles in approaching this home's Deep Foamjection™ project strategy.

1. Per Sweden's building code, there is 2.5 ft of insulation board directly under the homes flooring. Therefore the injection would need to start that much deeper to address the failing soils.
2. A waterproof membrane was directly under the utility room that could not be punctured, therefore no drilling could be done in the utility room. This room would have to be lifted and stabilized from outside the home and the perimeter of the room (inside the kitchen)
3. The entire home had radiant in floor heating, the local fire department used infrared technology to detect where the heating lines were located. These were indicated with red lines on flooring paper put down throughout the entire home. The blue lines indicated the boiler heat for the home. (Shown in photos to the right) Because of this there were large areas of the home that could not be drilled down into.

The contractor started outside on the most settled corner of the home. All outside pipes were angled to get material underneath the slab and foam board insulation. They installed pipe 6-9 feet, 4 feet below the insulation board. A soil boring report indicated what depth the weak soils were at. A plural component material was injected into the ground. The material expanded into foam that added strength to the soil as it expanded. As more foam was installed pressure was built to lift the slab.



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The team lifted in small increments to avoid damage. After they achieved 1 inch lifts, they would move and re-laser the entire home to monitor how much lift was still needed in each area. Approximately 100-150 lbs of foam was pumped at each injection point. Once the outside of the home was stabilized and lifted, they moved inside to finish the injections and stabilize the remainder of the slab.

Conclusion

The Deep Foamjection™ process was completed in a total of 25 hours, roughly 3 full days of work. The customer was extremely happy with the success of the lift with no problems during the job. They were able to inhabit the home immediately and patch the flooring.

Foam Installed: HMI Hydrofoam (402)

Time Savings	Time
Deep Foamjection™	3 Days
Alternative - Foundation Repair	14 Days

This map identifies that areas where material was injected to stabilize and lift the slab. The areas in red received the most foam where the slab was raised up to 3 ½ inches. The yellow and green areas supported the lift and stabilized the slab.

