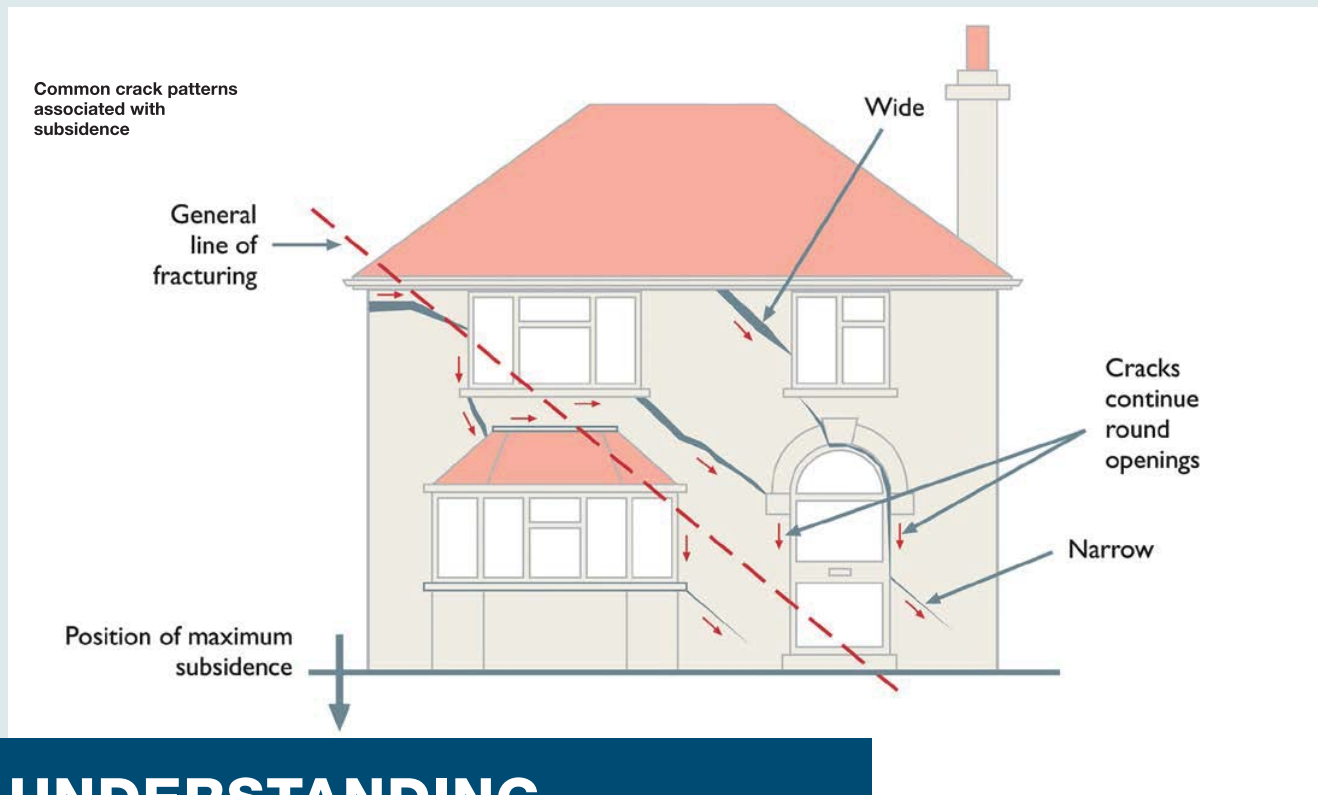


HELP FOR HOMEOWNERS: QUICK REFERENCE GUIDE



UNDERSTANDING UNDERPINNING BY PILING

Significant cracking to the walls of your home? Have you been advised – or do you suspect – that underpinning by piling may be necessary to support the property?

This *Help for homeowners: quick reference guide* provides an overview of the work that may need to be carried out.

COMMON QUESTIONS AND CONCERNS

What is underpinning by piling?

'Underpinning by piling' is a method of strengthening a home where its typical strip foundations have lost support from the ground beneath – causing cracking in the building.

Piles (columns of concrete or steel) are necessary when stable

soils from which new support for the building can be gained are at considerable depths, usually in excess of 5m. The piles transfer loads from the building down to a competent load-bearing stratum.

Why do foundations move?

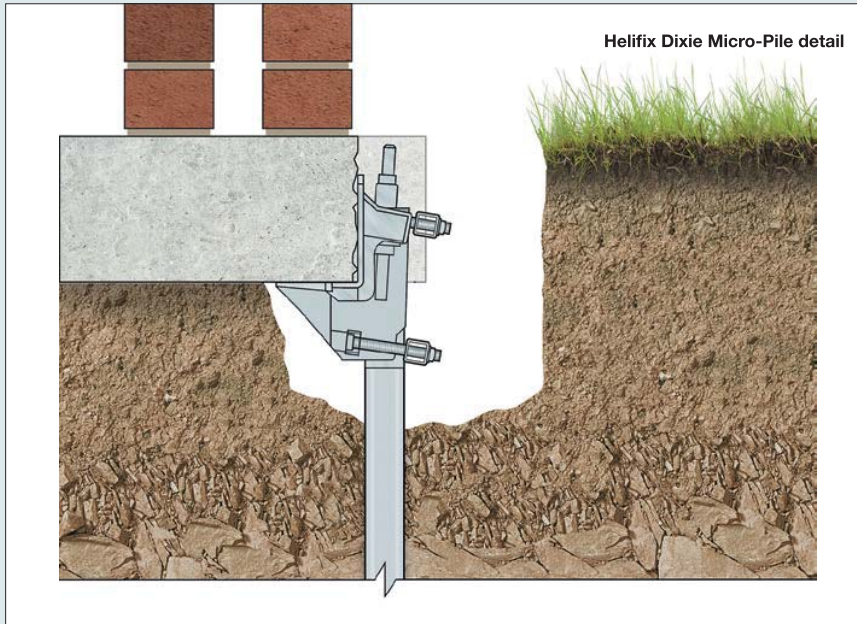
Movement sufficient for a home to require underpinning by piling can be due to many reasons – such as soil erosion by water from broken drains.



Methods for fixing the problem

Specialist piled underpinning systems as described in this guide are just one way to create a new foundation under an existing one. The two others are:

- Traditional underpinning
- Injected systems using expanding foam



MAKING MODIFICATIONS

The work

Underpinning by piling involves the creation of vertical columns (piles) to one or both sides of a failing strip foundation, to transfer the loads on the foundation to good ground underneath — sometimes in excess of 5m below the surface. The piles are often referred to as ‘mini-piles’ because in civil engineering terms they are small, between 100mm and 300mm in diameter.

Mini-piles are tailored to suit the specific requirements of each job. They generally come in two basic forms; steel piles screwed or driven into the ground, and concrete piles — where the ground is augured (drilled) and the holes subsequently filled with steel reinforcement bars and *in situ* concrete. Specialist proprietary systems also exist which offer specific advantages for bespoke applications.

Mini-piles positioned either side of the original foundation are generally linked by a capping beam which offers direct support to the wall above the original foundation. Mini-piling equipment is small, so it can be taken inside buildings with limited width access, and used where headroom is restricted.

Where disturbance inside a home

has to be avoided, the foundation strip can be supported by a single row of piles external to the building’s footprint, connected to the building and provide support via a cantilever pile cap.

Summary

Underpinning by piling can be a disruptive process and the necessary operatives, plant and materials can be temporarily intrusive but...

...it can be a highly effective means of permanently combatting structural movement caused by profound lack of ground support.

Look out for...

Some residual settlement of the building, as the new piles take the strain of imposed loads and transfer



these downwards. This is normal shortly after the work has been carried out.

If you feel your home may require underpinning by piling, The Institution of Structural Engineers recommends that you seek advice from a suitably qualified professional; ideally a Chartered Structural Engineer. A list of qualified engineers working near you can be found at: www.findanengineer.com

The publication of this quick reference guide is supported by:



The Dixie micro-pile system from HELIFIX provides structural support to a building’s foundations following subsidence. With no mass excavations or spoil removal, it causes minimal disruption to the building fabric or to the occupants who normally remain in

the residence while work is carried out. Requiring only lightweight hand-held equipment, it is ideal for situations with restricted access and produces extremely low levels of noise and vibration.

Micro-piles are often combined with HELIFIX masonry repair systems to ensure the above ground structure is also reliably repaired and secured with all repairs being fully concealed. www.helifix.co.uk