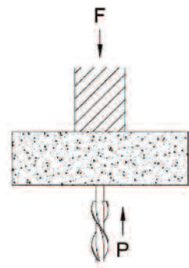
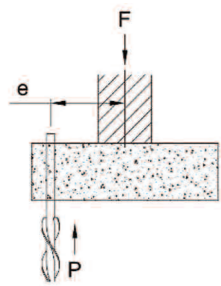


# Design and Applications

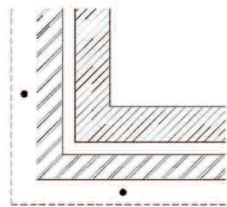
## FORCES ACTING ON A SUPPORT



If the support could be placed directly below the foundation there would be no moment. This is normally the case with new build applications.



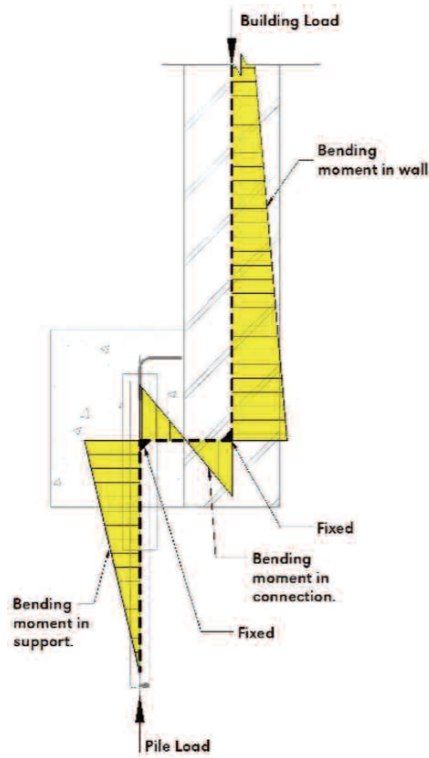
Remedial supports are generally installed outside the face of the building. This creates a moment at the joint which must be resisted by either structure, the new support or both acting together.



At the corners of a building the strength of the structure is high and a high proportion of the moment generated by the connection can be taken by the structure. Away from the corner a larger proportion of the load must be taken by new support.

## CONNECTION DESIGN

The concrete connection allows the support and the structure to act together. The connection must transfer the axial wall loads in shear and the moment produced by the eccentricity of the support.



In most arrangements the moment will be shared by the structure and the support. There are often only very small moments at the connection.

## CONTACT US

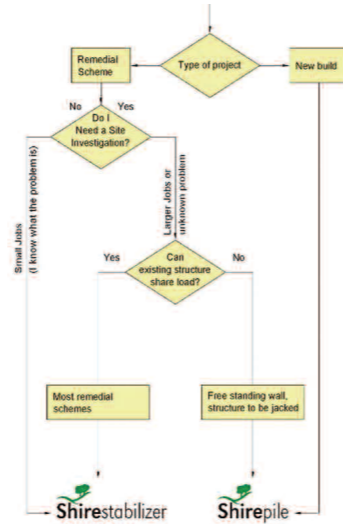
For further information on appropriate capping details, project design or performance limits, please contact the Wykamol Technical Department  
 Tel: 01706 831223  
 email: [technical@lectros.com](mailto:technical@lectros.com)  
[www.thorremedial.com](http://www.thorremedial.com)



The Wykamol group, Units 1, 3, Knowsley Road Industrial Estate, Haslingden, Rossendale, BB4 4RX. Tel: 01706 831223

## APPLICATIONS

Supports can be fitted with jacking plates to enable the lifting of light structures such as conservatories, porches and garages that are supported on shallow foundations. This often removes the need for disruptive and costly rebuilding.



**Shirestabilizers** are designed to work with the existing structure and can provide full or partial support.

Typical uses would be the stabilization of foundations resting on soft ground or ground subject to clay shrinkage movement.

Suitable	Possible	Generally Not Suitable
Single storey	Three storey	Fill over 10m deep
Two storey generally	Two storey with deep foundations in clay shrinkage or peat	Three storey in clay shrinkage or peat

**Shirepiles** are used where the support can not rely on assistance from the existing structure. Typical uses would be a new build garage, conservatory or remedial support to a free standing wall.

Suitable	Possible	Generally Not Suitable
Single storey	Two storey	Three storey

# Shirepiles & Shirestabilizers

For remedial stabilization and new build support Shirepiles and Shirestabilizers provide engineered solutions that are economical and quick to complete. The supports can be installed with limited access and minimal disruption. Most piling operations are complete within 1 day.

- 1. New Build Piles • 2. Prototype Testing • 3. Remedial Stabilization
- 4. Minimal Spoil Removal • 5. Jacking • 6. Limited Access Applications



The Wykamol group, Units 1, 3, Knowsley Road Industrial Estate, Haslingden, Rossendale, BB4 4RX. Tel: 01706 831223

# General Information

## INTRODUCTION

Shirepiles and Shirestabilizers have been developed over a number of years to provide a cost effective, engineered solution for subsidence repairs and to support new lightweight structures.

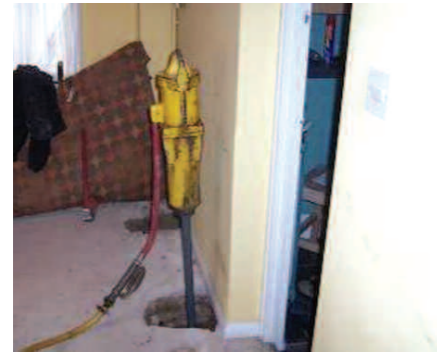


The efficient method of installation ensures minimal disturbance for the client and means minimal enabling works are usually required.

Shirepiles are generally used in new build applications, and supported by full calculations and safety factors.

Shirestabilizers are used in remedial applications where they are designed to work with the existing structure.

## INSTALLATION



The supports are installed using an adapted pneumatic driving hammer, enabling easy access for installation in confined spaces. Compact pile caps remove the need for time consuming and expensive mass excavation, keeping inconvenience to an absolute minimum.

## RESEARCH

The support components have been tested in compression and bending at Aston University.



Site performance of the installed supports is determined by measuring driving speeds. The relationship between driving speed and compression resistance has been established by carrying out compression tests at control sites.



## CAPACITY

Shirepiles and Shirestabilizers can generally be used to depths of approximately 10m (greater depths are achievable in certain conditions).

The supports will carry loads from 30kN to 100kN dependent on ground conditions. Provision of site geotechnical information will assist Wykamol technical staff to predict the potential performance and drive depths of installed supports.

## BUILDING CONTROL

Where building control approval is required calculations and site performance data is submitted to the local authority. Wykamol technical department can provide assistance with this if required.

## JACKING

Supports can be fitted with jacking plates to enable the lifting of light structures such as conservatories, porches and garages that are supported on shallow foundations. This often removes the need for disruptive and costly rebuilding.



## CORROSION

Research carried out in America and by British Steel has shown that corrosion in driven piles is unlikely to be significant due to the limited oxygen supply.



After fabrication the steel is given an electrolytic zinc coating to give enhanced protection against corrosion. The surface is prepared and given a further high slip powder barrier coat. This increases driving speeds and reduces negative skin friction.

## WARRANTIES

A 12 year underwritten warranty is available on all engineered Shirepile and Shirestabilizer schemes.

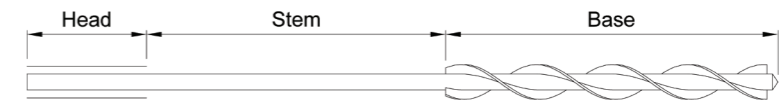
## APPROVALS

Shirepile and Shirestabilizers are approved for use by Local Authorities, Consulting Engineers, Surveyors, Building Insurers and Loss Adjusters.

## INFORMATION

For further information on application, capping details, job specific design information or performance data, please contact the Wykamol Technical Department on: 01706 831223 or email: technical@lectros.com

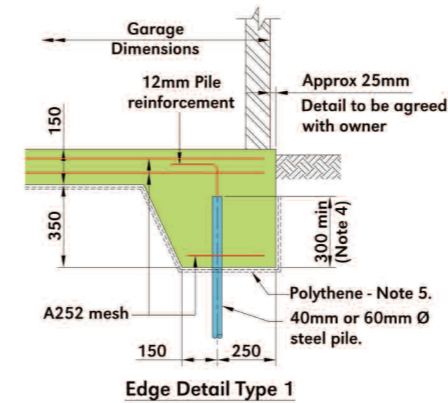
# Components



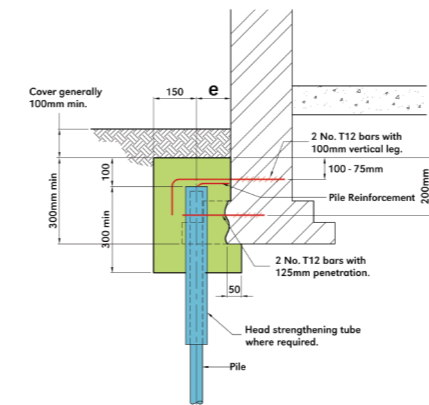
## HEAD

The head consists of a steel circular hollow section. After driving the core is filled with a high strength cement grout and reinforced with a 12mm steel rod.

With new build applications it is generally sufficient to cast the top of the Shirepile into a thickened slab or edge beam. The load is transferred from the new structure into the pile by a combination of bearing on the pile head and friction down the sides of the pile.



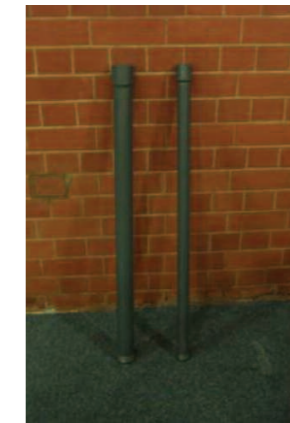
In a building repair situation, Shirestabilizers are usually installed on one side of the existing foundation only.



The standard method of connecting to the building is a reinforced concrete cap. This is adaptable to different foundation types and the rigidity reduces the rotation at the head of the support.

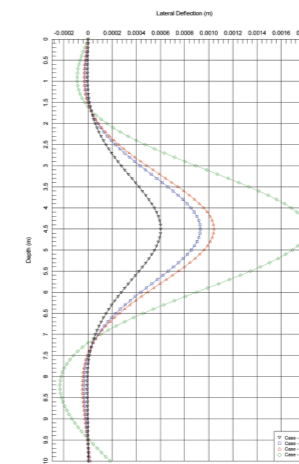
## STEM

The support stem transfers the load from the head to the support base. The stem is constructed from steel circular hollow sections and is available in 40mm and 60mm diameters. Generally 40mm stems are used for short supports and 60mm stems for long supports.



The stem has a high slip powder coat finish. This makes installation easier and reduces any negative skin friction.

Computer analysis of buckling of support stem.

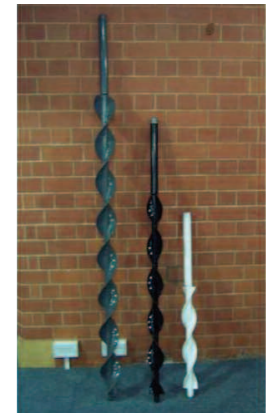


An analysis in a range of soil conditions has been carried out to allow the correct stem diameter to be specified.

## BASE

The base consists of a steel rod with external helical fins and is available in 3 sizes.

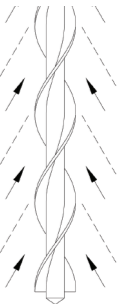
The 1.5m base is used in most applications. The 1m base is used in hard soils where the main load transfer is end bearing. The 2m base is used where support is required in soft/loose ground.



## SUPPORTS IN GRANULAR MATERIAL

In granular material most of the pile capacity is gained through end bearing.

In a traditional pile the end bearing is the diameter at the end of the pile. With a helical support end bearing results from the plan area of the helical fins.



## SUPPORTS IN COHESIVE MATERIAL

In a cohesive material most of the load capacity is derived from friction on the sides of the support.

When a helical support is locked in position, the failure surface is between the tips of the projection fins. This failure surface is stronger than the failure surface in contact with the shaft.

