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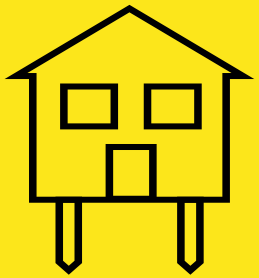
UNDERPINNING

Mini Pile Underpinning is the process of strengthening the foundation of an existing structure by transferring the load of the structure to suitable bearing strata at depth. Underpinning may be necessary if the original foundation is no longer capable of supporting the existing structure due to changes in ground conditions or if the useage of the structure has changed. Various mini pile underpinning solutions are available to meet individual project requirements.



DESCRIPTION

Mini pile underpinning can be used as a safer and more efficient alternative method to mass concrete underpinning. This method involves transferring the load from the existing structure to suitable bearing ground at considerably greater depths than traditional methods.

Walls of up to 300mm wide and line loads not exceeding 50kN/m can be underpinned from one side of the wall using a 150mm dia pile and knuckle system. Walls greater than 300mm wide and line loads greater than 50kN/m can be underpinned with piles on both sides of the wall, using pile diameters from 105mm to 220mm dia. These piles are connected using needle beams and maybe incorporated into a raft design should internal and external walls require support.

Where zero vibration is required, a jack pile system can be adopted in conjunction with a raft or ground beam system using the dead weight of the structure as a reaction to install the piles.

APPLICATIONS

- Residential sites
- Variable ground conditions
- Refurbishing buildings and extensions

ADVANTAGES

- Saves time
- High load capacity
- Cost effective
- Extensive in-house fleet
- Suitable for indoor and outdoor works
- Minimal disturbance to adjacent structures

INSTALLATION

After the floors/paths etc have been removed by a builder, mini-driven piles are installed at pre-determined pile locations at 1.0m - 1.5m centres either in pairs outside/inside, or singly outside if load conditions are favourable. Local excavation is then carried out at each pile position approx. 500m wide x 500mm deep x 750mm long and the pile cut down to that depth. A pocket is broken out through the existing wall to allow a predesigned steel-reinforced needle beam to be installed into the pocket. Reinforcement from the pile is tied into the needle beam and then concreted using the appropriate mix. This procedure is repeated until all needle beams have been cast. Floors/paths are then reinstated by the builder.

TECHNIQUE CAPABILITIES

SPECIFICATION	FROM	TO
Standard pile size	105mm dia	220mm dia
Typical load capacity	60kN	250kN
Practical depth	4m	20m

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