



Piled Raft



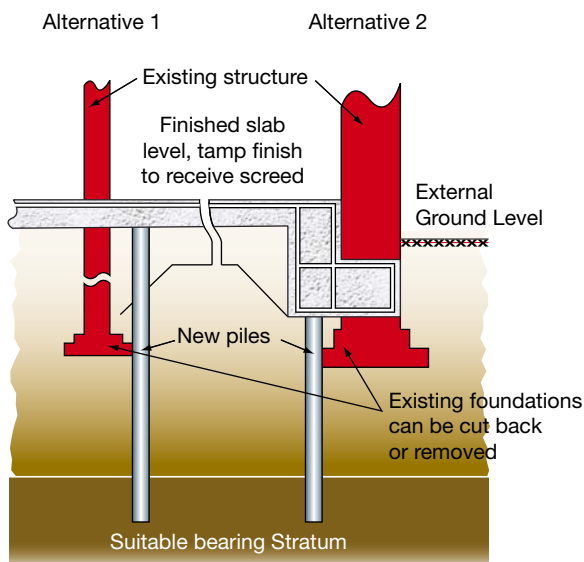
Federation of Piling Specialists



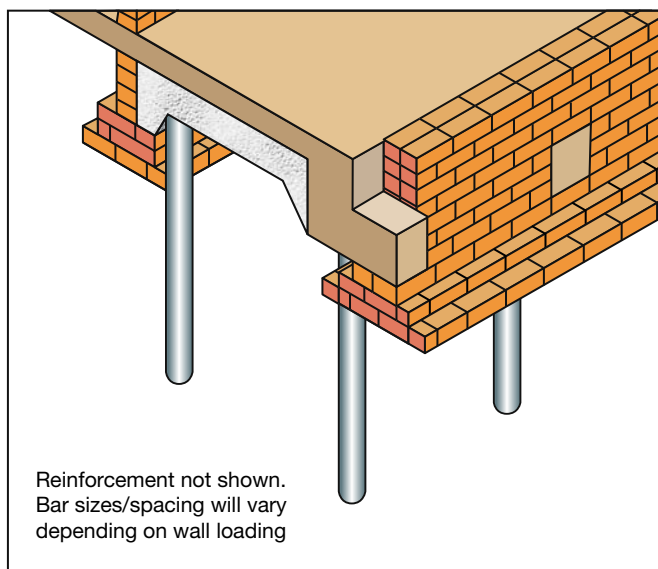
Deep Foundations Institute



Association of Specialist Underpinning Contractors and Engineered Foundations



U5a Section through foundation



U5b View of piles and raft

Description

The stabilisation of existing wall foundations (to whole rooms) by the installation of mini-piles, capped with a reinforced concrete raft incorporating needle beams and reinforced concrete ring beams as necessary to support walls and to provide lateral restraint and a new floor.

Loading Capabilities

Loading is based upon the bearing capacity of the underlying strata which will determine mini-pile size for this system. Pile sizes may generally be considered as follows:

General Guidelines for Mini-Pile Sizing		
90mm dia	SWL	Up to 40kN
105mm dia	SWL	40 - 60kN
150mm dia	SWL	60 - 100kN
200mm dia	SWL	90 - 120kN
220mm dia	SWL	120 - 200kN
250mm dia	SWL	150 - 250kN

In certain ground conditions these loadings can be exceeded.

Application

Foundation stabilisation where bearing strata is at depths in excess of 1.5m where complete rooms, or structures are to be underpinned and includes the provision of a new, suspended internal floor slab. Alternative application of this system may be used where expansive soils exist. (Clays - heave/shrinkage).

Installation Procedure

Install piles, either driven, drilled, jacked or augered, internally at centres determined by loadings. Break out and construct reinforced concrete needle beams at 1.0m - 1.2m centres. Reinforce and construct ring beam and reinforced concrete floor slab.

Advantages

- a) Economic at depths greater than 1.5m. Additional costs are linear for increased depth
- b) Provides lateral and transverse ties throughout the structure with piled foundations for internal walls and floors
- c) Provides fully suspended replacement ground floor slab
- d) Quicker when compared with dig-out systems
- e) Especially suitable where access externally is restricted and lateral and longitudinal restraint is required
- f) Minimises disruption to existing external services (i.e. drains and service pipes) and consequential reinstatement
- g) Recommended for total structure isolation from underlying strata, particularly in clay heave/shrinkage situations.



