

Abbey Pynford

Case Study— Magdellan Court

Jack in the House.....

The detached house at Magdellan Court had suffered differential subsidence such that the back right hand corner was 100mm lower than the front right hand corner and the walls were correspondingly out of vertical. As this was a new property it was not considered that underpinning in the existing position was an acceptable solution. Abbey Pynford were approached by insurers to see if it would be possible to jack the property back to level and return the walls to verticality to within reasonable building tolerances. It was also considered that a contributory cause of the problem was changing volume of the clay substrata beneath the property and the final foundation solution therefore needed to incorporate anti-heave precautions.

The property was underpinned and returned to level using a piled raft underpinning scheme incorporating anti-heave precautions. The piles and the raft were initially constructed separately and then jacked apart by different amounts across the site to return the underpinning raft, which was constructed out of level on purpose, to level and at the same time returning the walls to verticality. The piling itself was complicated by the need to construct grouted rock sockets into the underlying mudstone. Anti-heave precautions to the raft slab were provided by casting it on Claymaster for the part of the property which required to be lifted the minimum amount and by relying on the void which would be created by the lifting process elsewhere.

Jacking was achieved by bolting lifting frames to fixings cast into the raft slab at each pile position and by installing Abbey Pynford AutoProps between the frames and jacking tubes protruding from the top of each pile. The jacking operation was carried out in several cycles with the amount of lift individually calculated at each pile position and pre-set into the jacking system so that each part of the building was lifted by the appropriate amount to return the slab to level. Obviously the higher end of the slab was lifted only a nominal amount and the lowest part of the slab was lifted eventually by approximately by 100mm. Following completion of the jacking work and agreement with the clients Engineer that the best possible result had been achieved the final connection between the jacking tubes and the raft slab was made by a proprietary grouting process. After the curing of the grout the jacking frames and jacks were removed and the jacking tubes cut off flush with the raft slab.

Location:
Magdellan Court

Client:
Private Householder with
Insurance funding

Duration:
11 Weeks

Abbey Pynford

Second Floor, Hille House,
132 St. Albans Road,
Watford,
Herts.
WD24 4AQ

Phone: 0870 0858400
Fax: 0870 0858401
E-mail: info@abbeypynford.co.uk



Abbey Pynford

Construction Phase Highlights



Raft slab reinforcement in place prior to concreting with temporary props in polystyrene boxing on the right hand side and templates supporting holding down bolts for jacking frames visible at pile positions.



Jacking frames in place with Abbey Pynford AutoProps installed bearing on jacking tubes protruding from the piles but not connected to the slab.



The building perimeter during the jacking operation is shown and the horizontal gap beneath the concrete slab edge resulting from the jacking operation is clearly visible. Following the jacking works the excavation around the perimeter of the building, necessary to entirely disconnect the structure from the ground was backfilled to cover the slab edge.