

# Article from Construction Repair

## The Restoration of Ancient Buildings

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### Saved by modern technology

*The implementation of concealed and dry diamond core drilling methods for work in occupied premises.*

Internal drilling using a totally concealed system which enabled the installation of a dust tight removable support to guide the drill barrels.

Collaboration between Golz UK Ltd., CINTEC and W T Specialist Contracts using modern building technology solved a construction problem that had previously only been dealt with by demolition or expensive bracketing. More importantly the occupants did not have to be decanted during the structural strengthening. This saved considerable sums of money as well as causing minimal disruption to the residents. Golz UK LTD's research into dry diamond drilling technology, CINTEC specialist cementitious injection anchor system and the innovation, training and skill of W T Specialist Contracts is a success story of collaboration and modern technology.

### The problem

Watford, in common with many local authorities has a large number of Lindsey Parkinson -- High-Speed System Build (HSSB) flats built in the mid sixties. These structures comprise a mixture of in situ and prefabricated wall sections. The floors were constructed of Bison Type load bearing hollow section panels with as little as 35 mm bearing on internal structural walls. The whole structure did not comply with present day requirements in regard to robustness. Thus a gas or similar explosion in one of the flats could lead to progressive collapse.

### Previous solutions

All previous attempts at a solution had either been to demolish the structures or to attach brackets to the floor slabs and outer skins. The latter solution was expensive, as it required the removal of kitchen units and bathroom fittings as well as complete internal redecoration. There were also frequent residual problems through water ingress after flashings and walls had been drilled through.

### Proposed solutions

Watford Borough Council instructed Curtins Consulting Engineers who had initially discovered the defect during a routine structural assessment to design a solution. They proposed an outline system design for an anchor system to be installed in all floor and roof levels above ground floor. Consulting Engineers Scott Wilson Kirkpatrick on behalf of CINTEC then prepared a complete detailed anchor system.

## **Technical problems**

Many of the teething problems in conjunction with drilling and installing of the extra long anchors were resolved during the early stages of a similar contract completed in the previous year in Basildon for the Commission of New Towns.

The drilling involved going through hollow concrete flooring slabs with the inhabitants in situ. The difficulty of this operation was compounded because of the highly abrasive flint aggregate and the presence of some reinforcement. Drilling with conventional water flushing would have resulted in considerable damage to the property as well as inconvenience to the residents. It was therefore decided after numerous consultations with Golz UK Ltd, to use polycrystalline diamond (PCD) bits. This was an important decision because up until this time, dry diamond drilling had only been successfully used over much shorter lengths and through materials such as brickwork.

With this method Golz UK Ltd. syndrill coring bits were able to drill holes of up to 8.8 m long. However, before this could be achieved collaboration between Golz UK Ltd. and W T Specialist Contracts also devised a method of internal drilling using a totally concealed system which enabled the installation of a dust tight removable support to guide the drill barrels. This was both a delicate and skilful operation aided by the use of radio communication between the drill operative outside and the observer inside the building. Such attention to detail resulted in a 9-month contract being completed 3 months early.

## **Conclusion**

Minimal damage was done to the interior of the apartments and Watford Borough Council remains pleased with the achievements of all involved. The method saved a considerable amount of money and the system could be the most viable solution for strengthening properties of this type throughout the country.

**Enquiry No: 1**