

Creation of penetrations through un-bonded PT concrete slab

4 North St Andrews Square, Edinburgh

Client

Knight Property Group

Main Contractor

ISG

Works Commenced

October 2017

Works Completed

February 2018

In October 2017, ISG began extensive refurbishment of 4 North St Andrews Square in Edinburgh City Centre. The £8 million redevelopment of the eight storey building included the addition of an extra floor at roof level, creation of a new lift core, open plan floor plates and bike storage facilities. Once complete, the building will accommodate up to 500 staff and offer stunning views over the city.

ISG enlisted Freyssinet to create penetrations through post-tensioned (PT) concrete slabs through the centre of the building to enable the construction of a new lift core.

Following the safe and controlled release of the existing load within the affected tendons Freyssinet's in-house hydro demolition company Aquaforce Jetting Ltd demolished the concrete slabs, creating 8no penetrations approx. 10m x 3.5m using both hand lance and robotic cutting techniques.

Once the existing 15.7mm un-bonded tendon arrangement had been exposed, Freyssinet's technical department assessed the configuration and presented re-tensioning proposals to the Client's designers for approval. Freyssinet's extensive in-house technical experience of PT slabs was invaluable in offering dynamic design solutions as the works progressed.

Upon receipt of approval, new live end anchorages were created within the over break area to the perimeter of the new lift core. Additional rebar and anti-burst steels were installed along with additional u-bars for subsequent tie-in to the new lift shaft walls. Falsework was erected to the underside of the slab, and following installation of formwork, the new slab edges were constructed using high strength gain concrete, which allowed 50N re-tensioning with 2-3 days cure.

The tendons were then re-tensioned to the required design load, prior to handing the level back to the Principal Contractor for subsequent construction of the lift core walls.

The works were completed on programme and budget and to the satisfaction of the Client.

