

## Halifax Piece Hall, Halifax, West Yorkshire, England

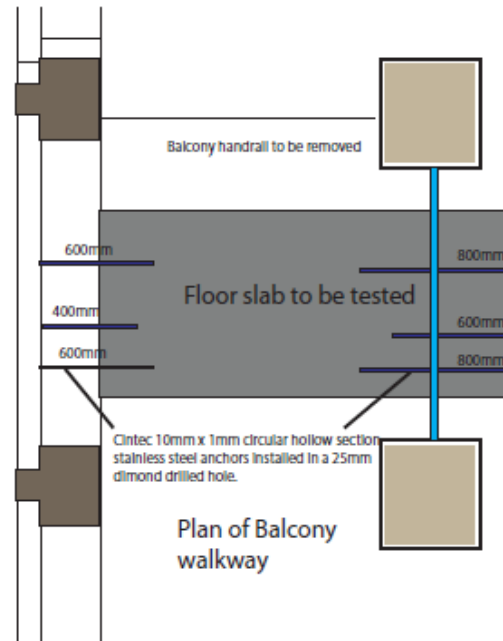


The Halifax Piece Hall is an imposing building in the centre of the town of Halifax, Yorkshire England. It opened in January 1779 with over 300 separate rooms arranged around a central courtyard. It is a large quadrangular building built of freestone and measures 10,000 sq.yds. It is fronted with two interior colonnades that have spacious corridors leading to arched rooms. It went into decline around 1815 when the rules were changed to allow the sale of cotton goods.

A recent restoration program discovered that the stone floor slabs on the first floor had diminished thickness due to the heavy pedestrian traffic over the years. Some of these slabs were reduced to 80mm in thickness and posed a structural risk of collapse. As a result Cintec specialist contractors were called in to provide a solution to this difficult problem. Due to the amount of material remaining in the slab thickness, a small section anchor was chosen that had to be carefully installed using diamond drilling techniques. This was a Cintec 10mm x 1mm CHS Section installed in a 25 mm diamond drilled hole. The question then arose of how could the intervention be tested? The solution was to use Cintec's other product range known as Waterwall. This product has been specially designed and patented to position and control large amounts of water over improvised explosive devices.



Balcony walkway.



A test was required was to verify and confirm the calculated loads size and positioning of the strengthening. A dead load on top of the slabs using water as a weight was used. The calculated design load was 520kg positioned directly on the top and centre of the slab. Two bespoke containers were manufactured from the Waterwall range of products. One container to provide the load using water. The second acting as an air bag, positioned directly beneath the slab to support the slab if it failed. The test proved a the anchors forfilled the engineering requirements.



Waterwall bag in position



Safety bag in position



Deflection being measured against load applied.



Flow meter measuring water in bag.



Pressure relief valve.