

Architect
Main Contractor
Structural Engineer
Client
Acoustic Design Load

Fitzroy Robinson
HBG
Whitby Bird (now Ramboll)
Diamond Trading Company
29MN

1. 17 Charterhouse Street is a new office building in the heart of the City of London that nestles in between several other buildings owned by the Diamond Trading Company. The building will become the new focal point of their London headquarters and provides links to many of the adjacent buildings.

2. The foundations of the new building are 7m away from the proposed CrossRail tunnel, which is due for completion in 2008. As many of the Client's existing buildings are effected by re-radiated noise and vibration from underground trains a decision was made to provide protection against this problem in the new building. An added concern was vibration interference with sensitive diamond weighing equipment and microscopes.

3. As CrossRail is not built yet it was not possible to carry out in-situ vibration measurements to determine the required natural frequency of the building isolation system. In CDM-UK's experience vibration from underground trains in London causes problems between 40Hz and 100Hz. To provide good protection against this type of vibration source a design natural frequency of 10Hz was chosen.

4. Main column bearings consisted of high performance CDM83 bearings designed to give a stress on the bearings of 5MPa under the loads given by the structural engineer.

5. All connection details to adjacent buildings, such as the bridges and risers, had to be designed as sliding bearings capable of accommodating $\pm 20\text{mm}$ movement. The cladding mullions also have sliding resilient connection details to ensure that acoustic energy is not transmitted from the non-isolated structure to the isolated structure.



Bearing installed prior to grouting



High level bearing



Column lowered by crane



Column lowered on to bearing



Column fixed down through stabilisers