

Case study



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For immediate release

Schöck Natural Frequency Calculator for 2.3 metre balconies

The third phase of English Cities Fund (ECf)'s Rathbone Market project in Canning Town, East London, has been recognised as one of the best new residential developments and awarded Development of the Year (schemes of more than 200 homes) at The Sunday Times British Homes Awards in 2017. The £160 million mixed-use development has created 652 new homes, 32,000 sq ft of retail space, a brand new library and Neighbourhood Centre and two new public spaces. Including the permanent home of the newly revitalised Rathbone Market. All ground floor properties are two-storey, in the style of a town house and on the upper levels the majority of apartments have a double aspect with balconies – each of which has an unusually demanding 2.3 metre cantilever.

Large free cantilevered steel balconies can be prone to undesirable vibration when people move about on them more heavily than usual and as designs become ever larger and more lightweight, the vibration behaviour takes on greater importance. When selecting the method of connection to the building slab, the challenge lies in choosing a component that ensures both an effective thermal break and a structural solution that is safe and compliant with the necessary serviceability requirements.

Isokorb can bear extremely heavy loads

To meet the standards required on the project, Schöck Isokorb structural thermal breaks have been incorporated. The particular units installed have 80mm of insulation, a width of 180mm; and to allow for any adjustment to differing slab thicknesses, a height between 180 and 280mm. The units can

bear extremely heavy loads, making them ideal in meeting the thermal and structural demands of large modern cantilever steel balconies; which with a thermally broken connection to a concrete slab, normally sees the elements exposed to both vertical and horizontal bending moments and shear forces.

Design uses Natural Frequency Calculator

Part L of the Building Regulations defines the limit values for thermal bridges, but Eurocode 3 specifies the required vibration verification in serviceability limit state. Vibration is considered to be a serviceability issue and as the perception of discomfort varies from one individual to another, no precise limit can be imposed that guarantees satisfaction for everyone during the balconies lifetime. Assessment of acceptable vibration is therefore not straightforward and the sensible approach is to design structures so that their natural frequency is sufficiently beyond potential excitation frequencies. To assess how prone to vibration they might be, Schöck has employed its latest Natural Frequency Calculator software package. This is a free downloadable program which uses geometric and material variables. When applied on this project it was found that the Natural Frequency of the balcony constructions was comfortably above the recommended limit frequencies. In general, depending on the type and utilisation of the structure, published data indicates limit frequencies of between 4 Hz and 7.5 Hz. Experience has shown that adopting a limit frequency of 7.5 Hz for steel balconies not only eliminates the possibility of undesirable vibration, it also enables cost-efficient design.

Verifiable performance

In addition to concrete-to-steel capability, the Schöck Isokorb range also provides solutions for concrete-to-concrete and steel-to-steel. The range meets full compliance with the relevant UK building regulations, has NHBC approval and offers LABC Registration. There is also the security of independent BBA Certification.

- Ends –

Contact Schöck on 01865 290 890 or visit the website at www.schoeck.co.uk for a free copy of the Schöck Thermal Bridging Guide; the Schöck Specifiers Guide and to view the full range of downloadable software.

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Notes to the editor

A leading European supplier

Schöck has grown to become Europe's leading supplier of innovative structural load bearing insulation products. The main product is the Schöck Isokorb – a thermal break for various types of cantilever constructions in new buildings and for renovation. Its headquarters are at Baden-Baden in southern Germany and there are subsidiary companies in Great Britain, France, Austria, Switzerland, Italy the Netherlands, Belgium, Poland, Hungary, Russia, Japan, Canada and the USA. Sales teams and partners operate in many other European countries and also Australia and South Korea. Schöck is committed to providing the highest level of technical back up and comprehensive customer service to the construction industry.

Images and Captions

[Rathbone 1.jpg]



[Rathbone 2.jpg]



The units can bear extremely heavy loads, making them ideal in meeting the thermal and structural demands of large modern cantilever steel balconies. Image: Schöck Ltd, royalty free.

[Rathbone wide view.jpg]



The two blocks feature a large number of balconies. Image: Schöck Ltd, royalty free.

[Rathbone from alley.jpg]



View from the public subway. Image: Schöck Ltd, royalty free.