Case Study

08/03/2016

Schöck demonstrates its customer service skills on Rathbone Market project

The Rathbone Market scheme, part of the Canning Town and Custom House regeneration programme, is a three-phase development that when complete will see the area totally reinvigorated. There will be a new market square at the heart of the community, bordered by around 35,000 sq ft of new shops and cafes. The development will also feature offices; community facilities, two new public squares and 652 new homes.

Work is underway on the final phase, which will deliver 216 new homes built to 'Lifetime Home' standards in a mix of one, two and three-bed designs within three blocks, ranging in height from six to 14 storeys; all arranged in a horse-shoe configuration around communal gardens. All ground floor properties will be two-storey, in the style of a town house, with double-height ceilings and rear amenity space onto the courtyard garden. The majority of apartments on the upper levels will have a double aspect and all will have balconies. The intention is to provide a development of great visual depth, using two colours of brick. On the outside a black / grey mix, with silver brick around the garden; cascading windows embossed with a diamond texture and the balconies finished in a powder-coated gold.

The balconies are designed with an unusually large 2.3 metre cantilever and to meet this demanding specification, it is the Schöck Isokorb that is being incorporated into the project. Specifically the product being used at Rathbone Market is the Schöck Isokorb type KS for concrete-to-steel connectivity. It is 180mm wide and between 180 and 280mm high to allow flex-

ible adjustment for differing slab thicknesses and contains 80mm of insulation thickness. It can also bear extremely heavy loads and this combination of features makes the units ideal in meeting the various thermal and structural demands involved with such large modern balconies. Which in the case of cantilever steel balconies, with a thermally broken connection to a concrete slab, normally sees the elements exposed to both vertical and horizontal bending moments and shear forces. The KS has a shear-bending interaction which, based on project specific loadings, allows for a much more flexible design and results in greater tolerance when designing steel balconies.

Calculating the Natural Frequency

A further key consideration, particularly with such a large cantilever involved, is the concern that thermally effective insulating elements, such as the Schöck Isokorb type KS can make balconies more prone to vibration, whereas steel balconies connected conventionally with simple pads are more rigid and less susceptible to vibration. Generally speaking, lightweight support structures, such as free cantilevered steel balconies, are particularly prone to undesirable vibration when people move about on them more heavily than usual. As designs become ever more lightweight and competitive in cost terms, the vibration behaviour of a structure takes on more importance. Thermally effective connections, such as the Schöck Isokorb type KS, are indeed ‘softer’ than traditional connections, due to their material properties, but if planned properly, virtually any balcony geometry can be designed using the Schöck module. To assess how prone to vibration the balconies are when thermally separated by the KS module, Schöck offers a free service whereby the Natural Frequency of the steel balconies are calculated using numerous geometric and material variables. On this project it was found that the Natural Frequency of the balcony constructions were above the recommended limit frequencies, even when using and considering the Schöck Isokorb type KS.

Unrivalled selection of connectivity solutions

In addition to concrete-to-steel connectivity, the Isokorb range also provides an unrivalled selection of solutions for concrete-to-concrete and steel-to-steel, with all products offering the security of BBA Certification and LABC Registration. The requirements of BRE IP1/06 and Part L of the Building Regulations, where the temperature factor used to indicate condensation and mould growth risk (fRSI) must be greater than, or equal to, 0.75 for residential buildings, is also comfortably exceeded by incorporating the Schöck Isokorb. It is a range that also meets compliance with the Government Standard Assessment Procedure, SAP 2012, concerning CO2 emissions from buildings and respectively heat losses through non-repeating thermal bridges. Here, in the area of the steel beam connection, using Schöck Isokorb results in thermal conductivities reduced by as much 89% to 94% compared to uninsulated connections.

Additional services from Schöck

Schöck provides a design service to assist the project team in the early selection of the optimum solution for the balcony connections – and on-site assistance for contractors is also available. In addition, there are two new installation aids. The first is that Schöck can offer guidance on the supply of a template which allows for an easier and more precise installation. And the second involves additional insulation strips on the bottom of the product, which also ensure easier and more precise positioning of the KS units onto the formwork prior to casting of the concrete slab.

For a free copy of the Schöck Thermal Bridging Guide and / or the Schöck Specifiers Guide – contact the company on 01865 290 890 or visit www.schoeck.co.uk

Key Project Information

Client:	English Cities Fund and London Borough of Newham
Location:	Canning Town, London
Architect:	CZWG (Masterplan, all phases, architect, phases 1 & 2) Project Orange (Phase 3)
Project Manager:	Buro Four
Quantity Surveyor:	Rider Levett Bucknall
Structural Engineer:	Ramboll

Images

[COURTYARD.jpg]

The Inner Courtyard Image: Project Orange

[ENTRANCE.jpg]

The main entrance area with the large balconies clearly evident
Image: Project Orange

[THIRD PHASE DEVELOPMENT.jpg]

The third phase development viewed across Newham Way
Image: Project Orange