

2016 CONCRETE SOCIETY AWARDS

The Shortlist

The Hiscox Building York

The Hiscox Building in York is made with 5000m³ of concrete – enough to fill two Olympic-sized pools. The end result is both visually and structurally stunning. From the piled foundations and the façade panels to the superstructure and the freestanding, ribbon-like central staircase, concrete is what defines this extraordinary building.

The Hiscox Building, York – finished exterior.
(Photo: Timothy Soar.)

The brief was to create a beautiful but functional building that reflects Hiscox's brand values and integrates art – a building that brings together the very best thinking in architecture, workplace and brand experience. It was also important that the design should encourage collaboration, communication and a sense of community.

It quickly became evident that concrete – without any added decoration or embellishment – would provide the best aesthetic and structural response to the brief. As a result, everything apart from the topmost steel frame supporting the green roof is made of approximately 5000m³ of concrete. That includes the piled foundations, superstructure, feature staircase, balustrades, precast escape stairs and precast brick-faced façade panels.

Positioning a contemporary building in heritage-rich York, on a site surrounded by Grade I and II listed structures, was challenging and inspiring in equal measure. The building's interior centrepiece – a ribbon-like concrete staircase – is inspired by the undulating city walls, as is the brick-weave façade, which also draws on the former hay and wool market that existed on the site until the 1920s. Externally, the roof terrace provides outstanding views of the Minster, while a new pedestrian route links the River Foss to the city centre.

The discovery of a medieval cemetery just beneath the site's surface also posed a challenge. Thanks to a collaboration between

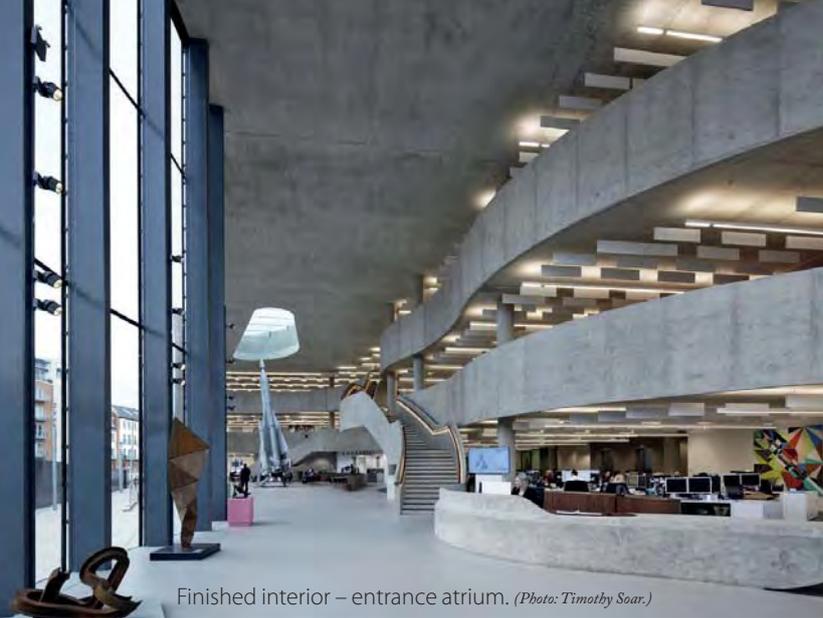
Arup, the consulting engineer, and the York Archaeological Trust, many of them were excavated. Arup arranged the building's foundations and reinforced concrete stability core positions around and over the rest of the remains, leaving them undisturbed.

The building was also designed and engineered to create a sense of place and arrival. The 4432m² open-plan office comprises four floors connected by the spectacular central staircase, which is the principal means of circulation and communication. The design maximises natural light, vertical circulation and outdoor space to create a bright, energised workspace, with a ground-floor café, contemporary art, break-out spaces and a roof terrace with panoramic views.

Materials and design

The chosen materials are robust and self-finishing, improving with age and use. They also celebrate contrast and texture. The largely exposed concrete interior is interspersed with bespoke details such as leather handrails and benches, and resin flooring in the atrium and WCs.

The seamless, fluid staircase design could only be delivered by an in-situ concrete solution. Arup, together with the contractor BAM Construction, provided highly innovative solutions to enable on-site construction, although the complex geometry of the plywood formwork built on-site still presented some of the most challenging build sequences on the project.



Finished interior – entrance atrium. (Photo: Timothy Soar.)



Architecture and engineering

The structural interaction and phased construction were developed to minimise movement and cracking effects, and to align with structural efficiency and critical construction activities. Arup developed a design and sequence that allowed the high-complexity stair and weaving slab balustrades to be installed after the construction of the principal floor plates. This helped a great deal with propping and formwork. Slab and stair geometry and reinforcement detailing were developed to suit either factory-made or site-built formwork.

The stair design also required supports that cantilever away from the main slabs; the disparate and irregular column grid ties in with this stair support, while also creating the open spaces of the main floors. This engineering response brings to life the architectural vision of a freestanding, flowing staircase that beckons both visitors and staff into the airy atrium.

Meanwhile, the exposed flat concrete soffits conceal services, provide excellent thermal mass and complement the acoustic and lighting strategy – a happy confluence of architecture and engineering. The choice of concrete also works well with the MEP strategy, which includes displacement ventilation and opening windows, as well as having the technical ability to cope with varying non-orthogonal shapes and spans.

To achieve the right colour – light, but not white – a mix was used that had been tried and tested on other high-profile projects where concrete is a central feature, particularly the London 2012 Aquatics Centre. Typically using 35% GGBS cement replacement, C32/40 strength-class concrete was used for most elements and C50/60 for the columns, in order to reduce their size.

To ensure a high-quality finish, the design team provided BAM with a careful

specification and also worked with the company to benchmark projects that had used the same concrete, as well as projects produced by GRKC, the reinforced concrete contractor. The contractors responded with excellent workmanship and planning to ensure, for example, that all cast-in items were co-ordinated, as with exposed soffits there are no second chances.

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Externally, the façade presents two faces: a south-facing articulated brickwork weave that provides solar shading and a north-facing glazed elevation that addresses the new pedestrian route and presents a welcoming face to the public. The brick portion is made of precast brick-faced concrete panels, which enabled rapid installation. These are gravity-supported and laterally restrained at the slab edges, with a ‘beam and post’ weave, which allows for the joints to be concealed. Hurks produced the precast panels, while Janinhoff supplied the bricks.

The roof terrace, meanwhile, is formed by the 750mm-thick concrete slab that spans from the concrete floor columns to the steel perimeter columns, to form the large sky-lit atrium space beneath.

Overall, concrete provides excellent value for money, as it offers both structural integrity and finish and requires no extra decoration, while also contributing to the energy strategy. The building is fully sustainable, with integrated engineering and structural solutions that provide a low-carbon, cost-effective environment that also supports employee well-being.



Frame and precast-brick cladding under construction.
 (Photo: BAM Construction.)

Above and left:
 Formwork to stairs.
 (Photos: BAM Construction.)

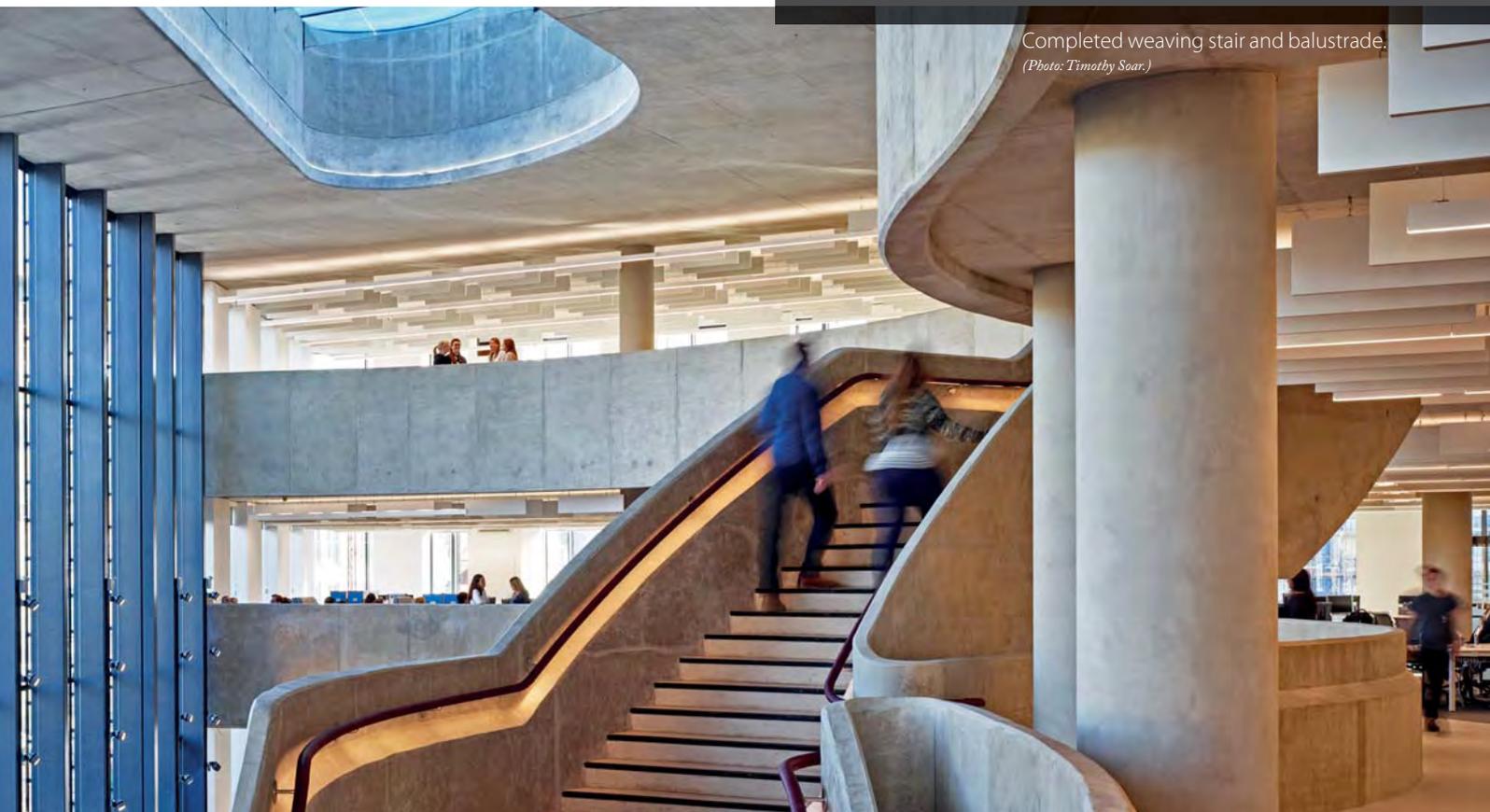
The end result is a landmark office building for Hiscox where concrete takes centre stage. The breathtaking sweep of the staircase up the atrium alone is a testament to the material's essential versatility and use to both designers and engineers. Its use throughout the rest of the building – both seen and unseen – results in a sense of joy, quality and permanence. As both backdrop and centrepiece, the concrete creates an environment that builds community, enhances well-being and sparks innovation. ■

Hiscox Building, York

Client	Hiscox UK
Consulting engineer	Arup
Architect	Make Architects
Contractor	BAM Construction (North East)
Workspace design consultant	KKS Strategy
Reinforced concrete contractor	GRKC
Precast panels	Hurks Precast
Brick supplier	Janinhoff Klinkermanufaktur

The Judges' Comments

Set within the York walls, the building is modern looking but with interesting precast basket-weave effect cladding, creating a less stark appearance. The plain finish works well and the formwork requirements would have been difficult to achieve; each form would be essentially unique. Inside, concrete would be the obvious choice for such an irregular curved requirement. With the degree of exposed concrete, it should be expected that thermal mass benefits would be significant. The building atrium is light and airy. Open-plan work areas are large and there is scope for change of use. The presence of a great deal of exposed concrete complements the large piece of 'art' installed. All services are cast-in and this presumably took considerable planning. Extra conduits were also cast-in to futureproof the building somewhat. The interior concrete is impressive in scope and goal, and the difficulties in achieving the layout must have been considerable.



Completed weaving stair and balustrade.
 (Photo: Timothy Soar.)