

Education – Sustainable building promotes inclusion

**British Construction Industry Awards
2019**

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**Social Infrastructure Project of the
Year**

for delivering exceptional social impact for
its stakeholders.

PROJECT

**Beatrice Shilling Science
Building**

CUSTOMER

**Royal Holloway University of
London**

CONTRACT

2 Stage Design and Build

Need

Royal Holloway University set out to create a dynamic new home for their Electronic Engineering department. The building would honour its commitment to the art of science and engineering and celebrate the achievements of alumni, Beatrice Shilling, by encouraging increased female student participation.

Sustainability and inclusion were the universities vision for the flexible laboratories which would be blended with new lecture theatres and collaborative student spaces designed to inspire innovation. To deliver their new facility they chose to retain Osborne as the design and construct partner following completion of the striking new £50m library, arts and student services building on the same campus.

Solution

The team hit the ground with a wealth of knowledge and understanding of the university's needs. This insight and site presence delivered some early wins for

the programme and reduced preliminary costs.

Managing services was one risk area to benefit with service diversions and the site office connections completed during the library contract. The programme and budget were further assured by redesigning the foundation and pile arrangement to avoid existing services.

Sustainable Design

The building had to be flexible and easily reconfigurable against future academic needs and student numbers. With a sharp focus on functionality, we responded with a long span, flat slab structural solution that allowed easy future re-configuration of partitions and service distribution systems. The column free floor plates provide unobstructed sight lines and maximum flexibility for alternative teaching methods and room arrangements.

Further innovation was delivered through a hybrid superstructure which maximised off-site componentry including pre-cast concrete, metal steel framing systems, and large format rainscreen cladding. This not only improved sustainability and quality but brought programme benefits

as the building frame could be erected quickly and made weathertight allowing for an earlier than usual start on the internal finishes.

Natural ventilation was maximised by the atrium design which created a 'stack effect' to harness the variance in vertical air pressure. Buoyant air is passively drawn through the teaching spaces as it heats and cools, which in combination with energy efficient plant and PV arrays reduces energy consumption and better controls classroom climate. The building achieved BREEAM 'Excellent'.

Inclusive Design

A key design element was an open-plan office environment for academic staff; a setting not normally favoured by academics due to the impact of noise during research sessions. Management consultation and value engineering developed a solution using an intelligent array of glass walled meeting rooms, leading to academic offices, via one way only access doors, with a host of smaller meeting rooms, all of which combined an open access environment with a sense of focused study; much to the delight of the academics.



The use of natural light and colour created a friendly and safe network of highly efficient, creative thinking spaces and bespoke lecture theatres. On the roof top, a unique field laboratory with solar panels and a wind turbine enables hands-on practical experience with alternative energy generation.



Outcome

Following directly on from the library and arts centre, the Beatrice Shilling Science Building has benefitted from early programme gains attributed to our site knowledge and understanding of the university's unique requirements. As a result, the building was officially opened one day after practical completion, to the appreciation of the University.

The brief for large modern lecture spaces, and multi-functional computing and electronic laboratories was delivered. Attractive 'help yourself' collaboration spaces, and a roof top solar and wind generated field laboratory all support the university's ambitions of improving social provision in the UK, increasing female participation in the sciences, and being sustainable.

Staff and students now have facilities which are designed to encourage inclusion and attract young people from every background into science and engineering. In the first year, female student numbers grew to 30% against a national average of 14%.

"The building lives up to all of the high expectations and demands put upon it by the University. As the building is now becoming full of academics, research teams and students it is working perfectly. Staff and students love the environment which is flexible, cheerful and inclusive. A highly diverse electronic engineering department has formed with well above average numbers of female students and female staff - Mission Accomplished!"

Professor Paul Hogg, University Vice Principal and Project Sponsor

