

UNIVERSITY OF CAMBRIDGE PRIMARY SCHOOL

Product: VELUX Commercial bespoke structural glazing systems

Architect: Marks Barfield Architects



Bespoke structural glazing systems by VELUX Commercial connect the University of Cambridge Primary School with nature

350 square meters of structural glazing from VELUX Commercial was installed to bring natural light and ventilation to the University of Cambridge Primary School – part of a much larger expansion project. The Northwest Cambridge development is a self-sustainable, modern urban

space aiming to create a vibrant area for the university's key workers. The Cambridge Primary School, designed by Marks Barfield Architects, was the first building completed in readiness to serve the local community.

The unusual shape of the building, coupled with the 15° pitch roof, required more non-standard shapes of glazing, kerbs and upstands to be installed effectively whilst maintaining the required performance.

CASE STUDY 30

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A natural ventilation system adequate for the high ceilings was also essential for the energy efficiency of the building envelope.

The specification mandated application of a bespoke roof glazing system. The solution was a combination of customised modular and bespoke designed structural roof glazing with additional ventilation elements to bring fresh air and daylight to the main building.

The doughnut-shaped steel frame main building has an outer radius of 46m and an inner radius of 24.5m accompanied with a pitched lightweight roof. To provide the right level of illumination, nine bespoke rooflights were recommended and designed to specification. Whilst the daylight requirements dictated the optimal size as 4.1x7.3m, the circular shape of the building was reflected in the final trapezium shape of the glazing pane (the length tapers from 7.3m to 6.5m).

A vertical back frame sits 1.6m above the outer radius roof to account for the opposite 15° pitch and to accommodate the louvre damper system.

The thermally enhanced rooflight system with insulated gable ends was designed for optimum thermal performance

of the roof openings. The louvre damper system provides natural ventilation in the high ceiling rooms and works in conjunction with the mechanical ventilation incorporated into the additional seven flat glass rooflights in two sizes. Three units of 1.2x1.2m were fitted to the outer radius and four larger, 1.5x1.5m units to the inner radius. All the units are manufactured from thermally broken aluminium and glazed with 6mm toughened outer and 6.4mm laminated low 'E' inner glazing with 16mm air gaps to comply with both the thermal insulation and the leakage criteria of Building Regulations Part L. All seven units are equipped with chain motors to facilitate roof access.

The steel frame communal block is a two-storey building with a flat roof, 36x26m in size, and is home to the hall, reception, seminar rooms and atrium dining room. Three 1.3x1.3m active roof terminals were installed above the seminar rooms and the small hall to provide ventilation and illumination optimal for creation of a positive teaching and learning environment. The main hall saw two bespoke rooflights (8.2m long and spanning 1.4m) installed whilst the dining room area benefited from a spectacular 8.2x3.8m (tapering to 0.7m) rooflight system.

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