

XtraXtra

case studies, industry updates, new products, services and much more...

Summer 2010

Lighting schools for the future

Kent's secondary schools are undergoing a radical transformation as part of the 'Building Schools for the Future' programme. It combines significant capital investment in state-of-the-art buildings and ICT facilities with a bold educational vision to transform teaching and learning. Northfleet Technology College (NTC) is one of the first schools to benefit and incorporates a range of rooflighting solutions.

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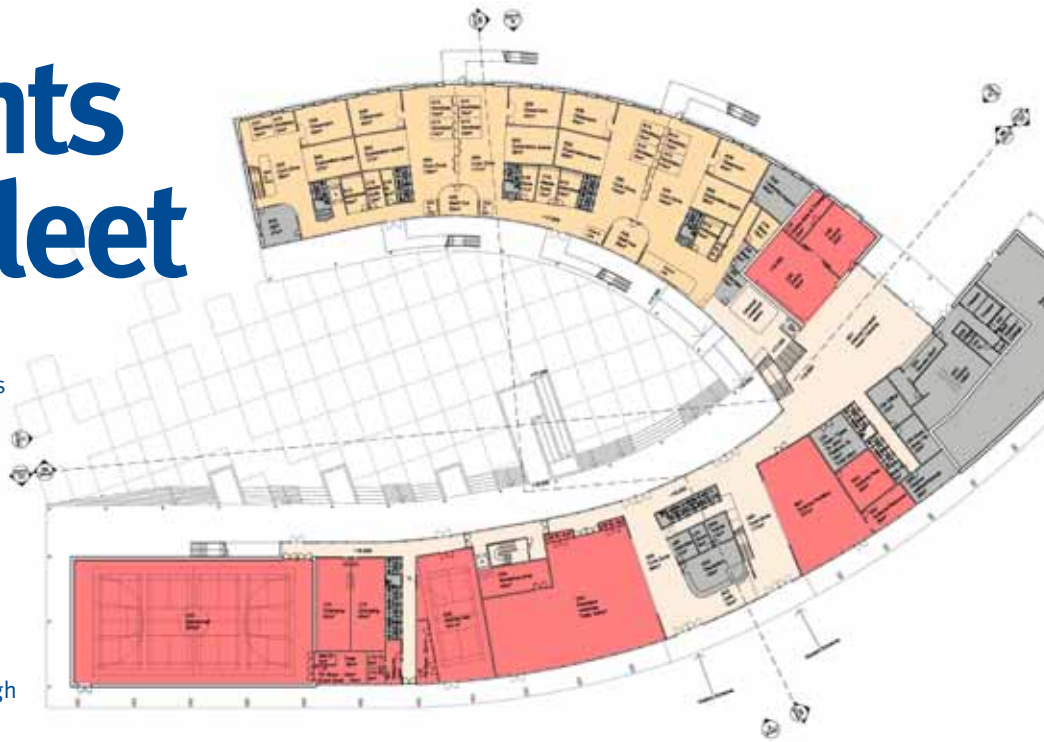

Xtralite
ROOFLIGHTS

Northlights at Northfleet

The new Northfleet Technology College (NTC) aims to be an inspiring experience, one that uses open spaces, natural lighting and technological excellence to nurture understanding, incite a positive outlook and ignite creativity.

The new building's design, by HKS Architects, is based on a plan form consisting of two, gently curved crescent blocks enclosing an elliptical courtyard. At the intersection of the blocks is a lively, central, communal 'Heart'; around which the main learning areas are arranged and through which visitors can circulate the building. The 'Heart' is linked to the main visitor entrance—the 'Launch Pad'—positioned centrally on the longer crescent, intended as a striking, dynamic feature that sets the scene for the building, drawing people in and making visitors feel assured, valued and welcomed.

HKS Architects Director of Education, Chris Grasby, commented: *"The vision of Kent CC and NTC is to completely redefine the school to 'nurture autonomous and creative learners'. Our proposal provides an 'adult' environment, which is open, bright and suitably sophisticated. Externally, the new school is sleek and modern; a statement of its technological excellence and as an institution with a forward-looking character. Our design provides deep open-plan areas which allow flexibility in group size through furniture arrangement and storage. Meeting the standards set in BB90 and BB93 in such spaces is a challenge achieved through careful specification, especially of facades and rooflights to achieve good daylighting."*



Natural lighting is a central element in the building's design strategy with extensive use of glazed walls, shielded by an overhanging flat roof. Upper floor areas benefit from generous rooflights, designed, manufactured and supplied by Xtralite. A series of square- and rectangular-shaped, flat (5° pitch) bespoke rooflights pour daylight into teaching and activity areas. In addition, a 5.8 m x up to 10 m tapered shape, flat structural glazing unit, provides dramatic lighting to a key circulation area. All of these rooflights have factory-sealed double-glazing with 'low-E' glass.

Complete roof-top units

Two distinctive elements on the crescent-shaped flat roof are; 13.5 m x 3 m complete northlight units, with vertical glazing incorporating 24 electrically-operated opening vents for environmental control. The unglazed slopes and ends of these units are insulated aluminium panels and Xtralite incorporated supports for solar heating panels as an integral part of the design. This demonstrates the company's versatility in delivering complete roof-opening solutions. Following a previous project award (reported in the last issue of Xtra Xtra), Xtralite has again been recognised as 'Sub-Contractor of the Month' by main contractor Kier for NTC.

Case study

Contemporary roof openings

Xtralite's black-framed, flat glass rooflights combine natural lighting and high insulation values at a new Building Schools for the Future (BSF) Primary School, with a contemporary look shared by matching automatic vent and access units.

The new £13m Southwark Primary School, recently completed in Old Basford, Nottingham, replaces an earlier school which dates from Victorian times. The rebuild is part of Nottingham City Council's £300m Building Schools for the Future (BSF) programme. Southwark Primary is also one of only 23 'exemplar' primary schools to be built in the country following the Council's successful bid to become a Pathfinder Local Authority and East Midlands Regional Champion. This aims to set a high quality benchmark ahead of major government investment in new primary schools through the Primary Capital Programme.

The new primary school, designed by Capita Architecture and built by Carillion, caters for 630 children aged 5 to 11 years and 90 children aged 3 to 5 years. A 'courtyard' scheme has been developed which is radically different from conventional primary school design. It provides a number of unique spaces helping the school to explore a variety of innovative teaching styles. Children have the opportunity to learn and play in high quality teaching and learning environments, including large hub spaces, adventure playgrounds, a theatre and hall, and a relaxation area called 'sky rocket'.

Environmental excellence

The building is also being designed to maximise natural light and natural ventilation in order to achieve a BREEAM 'excellent' accreditation. A series of Xtralite's X-Two rooflights played a key role in the natural daylight regime while providing high levels of thermal insulation. The black-framed rooflights have a thoroughly contemporary appearance with double-glazed flat glass tops. This design is carried through to a matching access hatch and an electrically operated automatic opening vent, both with insulated aluminium solid tops. Ventilation units, hatches and other elements from disparate manufacturers are invariably not considered as part of a building's original design concept. But Xtralite can help with a full range of AOVs and hatches designed to visually match the company's rooflights.

Exemplar project

Southwark Primary School was featured when Nottingham City Council's BSF Programme received the 'Best Education Project' award and the overall 'Grand Prix' award at the recent 2010 Public Private Finance Awards. The new school has been built by Nottingham's award winning Local Education Partnership (LEP), a public private partnership between Nottingham City Council and *inspiredspaces*. Southwark Primary 'exemplar' project has been developed from a blank sheet of paper to financial close in just nine months. The new-build primary school is designed to run on bio-diesel combined heat and power technology, which will enable over 70% of their energy requirements to be generated onsite from renewable sources. This clear aim to achieve the highest environmental standards is reflected in the integration of sustainability issues within the children's education as well.



Smoke control concerns

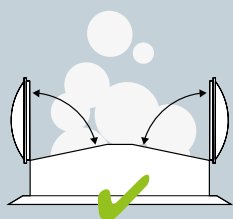
Smoke control incorporating rooftop Automatic Opening Vents (AOVs) is a particularly useful means of protecting escaping occupants, those awaiting rescue and fire-fighters. It is essential that AOVs allow effective smoke removal in all weather conditions, irrespective of wind direction. This important consideration is covered in the current standard for AOVs—EN 12101 Part 2—which points out that a single vent opening to 120° or less could suffer 'negative discharge'. In essence, wind could be channelled by the vent lid, forcing hot smoke and fumes back into the building with potentially lethal results.

For this reason, the standard requires single vents to open to 140°, while double vents opening to 90° are acceptable as they will also operate effectively irrespective of wind direction. All AOVs with lower opening pitches

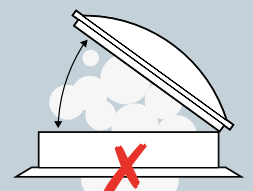
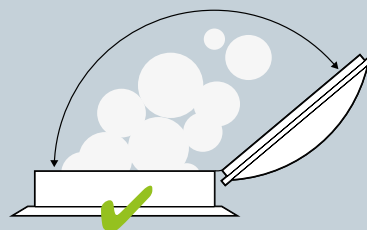
do not comply with the European Standard and cannot apply a CE mark—and, of course, could present a real danger to occupants.

The Part B Approved Document includes guidance on using AOVs on escape routes from flats, defining the minimum free area of vents and other requirements. Unfortunately, it fails to address the opening pitch issue and, unhelpfully, includes a diagram of a single vent shown

open to just 45° which is simply unacceptable under EN 12101. Regulation 7 of the Building Regulations demands compliance with National or European standards, CE marking or other reassurances that are unavailable for AOVs opening to lower pitches than those stipulated in EN 12101. It is therefore essential for building designers to avoid any single vent AOVs with an opening pitch less than 140°.



Double opening at 90° and single opening at 140° are acceptable



Single opening vents below 140° are unacceptable

Product News

Vertical kerb

The new Xtralite X2V vertical PVCu kerb has been launched as a cost-effective kerb adapter system. It makes fixing attachments easier than with splayed kerbs and is well-suited to automatic opening vents (AOVs) as well as X-Two rooflights.



Literature Update

AOV Product Portfolio

Xtralite's complete range of fully-automatic AOVs for smoke and natural ventilation is now covered in a comprehensive new Product Portfolio brochure, available via the website www.xtralite.co.uk.

Similar in design to Xtralite rooflights, AOV roof units are available with single units opening to 140° or 90° (for access, not smoke control), or double units opening to 90°. Tops can be solid insulated, single or triple polycarbonate, or double-glazed in glass. The company's AOV vertical systems have been developed

specifically for use in external walls as part of the fenestration design. Systems are available to provide a free area of ventilation of 1 m² or 1.5 m², to comply with Building Regulations Approved Document B, for smoke control, or other specified ventilation levels. Xtralite AOV louvred units are lightweight, compact and maintenance-free and suitable for installation on roofs, walls or other parts of the building's external envelope. Louvre blades are available in single- or double-skin aluminium, as well as multi-wall polycarbonate and laminated safety glass to let light into the building.



Making sense of safety

With the Health and Safety Executive currently reminding architects and their clients of their responsibilities under the CDM Regulations, now is a good time to clear up a few issues surrounding rooflights.

Increasingly, manufacturers are asked to design, as well as supply, rooflights. Under CDM 2007, they are then also considered as 'designers' and their particular competency in the field must be established. Unlike many manufacturers, Xtralite, has a team of expert designers with demonstrable, unrivalled experience in all aspects of rooflights.

CDM also requires architects to address the safety of those working on buildings—for example to maintain roofs—as part of the design process. Consideration of using

non-fragile rooflights forms part of this responsibility, but how can you be sure that requirements are being met? At Xtralite, we consider that rooflights should be classified using ACR[M]001:2005 'Test For Non-Fragility of Profiled Sheeted Roofing Assemblies', Edition 3—known as the 'Red Book' and recognised by the HSE. This requires a specific, dedicated test rig, described in detail in the Red Book and which Xtralite has on-site.

Other industries, such as curtain walling, make use of different test standards which

can be applied to rooflights. There is concern, however, that appropriate test rigs are not being used or that tests are not carried out by a 'competent person', as required by the standards. In both cases this gives flawed results. Clearly, it is important for architects and their clients to make sure that rooflight designers are competent and those tasked with carrying out non-fragility tests have the correct rigs, equipment and competency.

In any event, it is our policy at Xtralite to supply non-fragile rooflights to all educational and community building projects. Find out more about non-fragility at: www.xtralite.co.uk/nonfragility.asp

Contact Us

If you have any queries regarding any Xtralite products, call us now and Vikki will put you through to the relevant person.



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