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WA

Wood Awards

2013

Welcome

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Nobody needs to make the case for wood in architecture any more, given the proven durability of the material over centuries, the technological advances which are now opening up new construction methods and aesthetic possibilities for architects and builders, and its ecological credentials – after all, this is a building material palette of enormous variety that is also a crop, planted and harvested in sustainable fashion.

So one's attention turns instead to the creative way architects now use wood in their buildings. This year's winners and contenders in the Wood Awards demonstrate a new confidence. There is no longer necessarily a perceived need to shout a building's woodiness from its rooftop: where one used to encounter lots of examples of masonry buildings given little more than a superficial timber cladding, now the reverse is often true: buildings of structural timber clad in other materials, especially if locally-sourced. Timber also lends itself naturally to prefabrication, thus allowing savings in construction time as relatively large components – flat or volumetric – are delivered for rapid assembly. Given all this, plus the increasing ambition and growing size of commercial buildings exploring its properties, it's clear why architects love it.

As these awards demonstrate, wood operates at all scales from a finely-wrought piece of furniture to an entire building. One of this year's entrants won in both the Small Projects and Special Award categories, with designs best described as sculptural.

When exposed, however – externally or internally – timber has that particularly empathetic quality that stems from its origin as a living material. It is warm, it ages well, it has excellent acoustic properties. It's no surprise that it is so widely used in concert halls and churches, or to provide a more comfortable domestic environment than less workable and adaptable materials. So the Wood Awards 2013 are anything but niche: welcome to the progressive mainstream.

Hugh Pearman
Editor, The RIBA Journal

Cover image Bishop Edward King Chapel, Ripon College Oxford, by Niall McLaughlin Architects

Wood Awards – Buildings

This was another bumper year for the Wood Awards, with 318 entries spanning an enormous variety of projects. As ever, the shortlisting was the most agonising part of the judging. As in 2012, this involved circulating full details of all the entries to the judges who, over two weeks, each compiled their own shortlist. Combined, these then provided the basis for an informed, and sometime quite heated, debate as to which scheme should be selected.

There was a good spread of shortlisted building entries right across the UK. In no category was there an obvious winner. All the schemes we inspected showcased timber's versatility as a building material as well as a great pool of design and construction talent. Two things were particularly pleasing – the high standards of craftsmanship and, perhaps more importantly, the fact that we were able to give awards this year to some modest schemes where the selection of timber, design and workmanship have produced a splendid result on a tight budget. This must surely be the message these awards are designed to spread – that wood is a beautiful and economical material that can be used to great advantage in any building.

The Gold Award will come as no surprise to anyone who has visited the Bishop Edward King Chapel at Ripon College Oxford by Niall McLaughlin Architects. It is a glorious building to be in. Externally beautiful too, it is a serene space and it is a delight to sit on the fine curved timber benches. The judges were unanimous in agreeing to the Gold Award for this building.

It has been an enormous privilege, as well as being great fun, to be chair of the Wood Awards' judges for the last four years. I will certainly miss the debates with fellow judges and the very interesting site visits, but it is important that the judging panel is regularly refreshed – hence the reason for my departure. We have secured the services of exceptional judges, people at the top of their professions who voluntarily give a great deal of their time each summer. I am sure that the strength of the Wood Awards is highly dependent on their dedication and knowledge. I am confident that the awards are in excellent hands and will go from strength to strength.

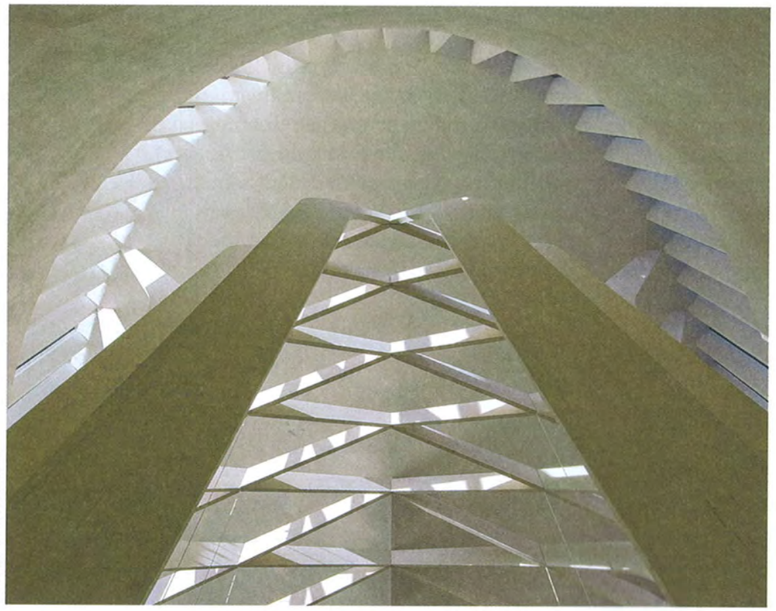
Michael Morrison
Chair of judges, Wood Awards – Buildings

Winner
Bishop Edward King Chapel, Oxford

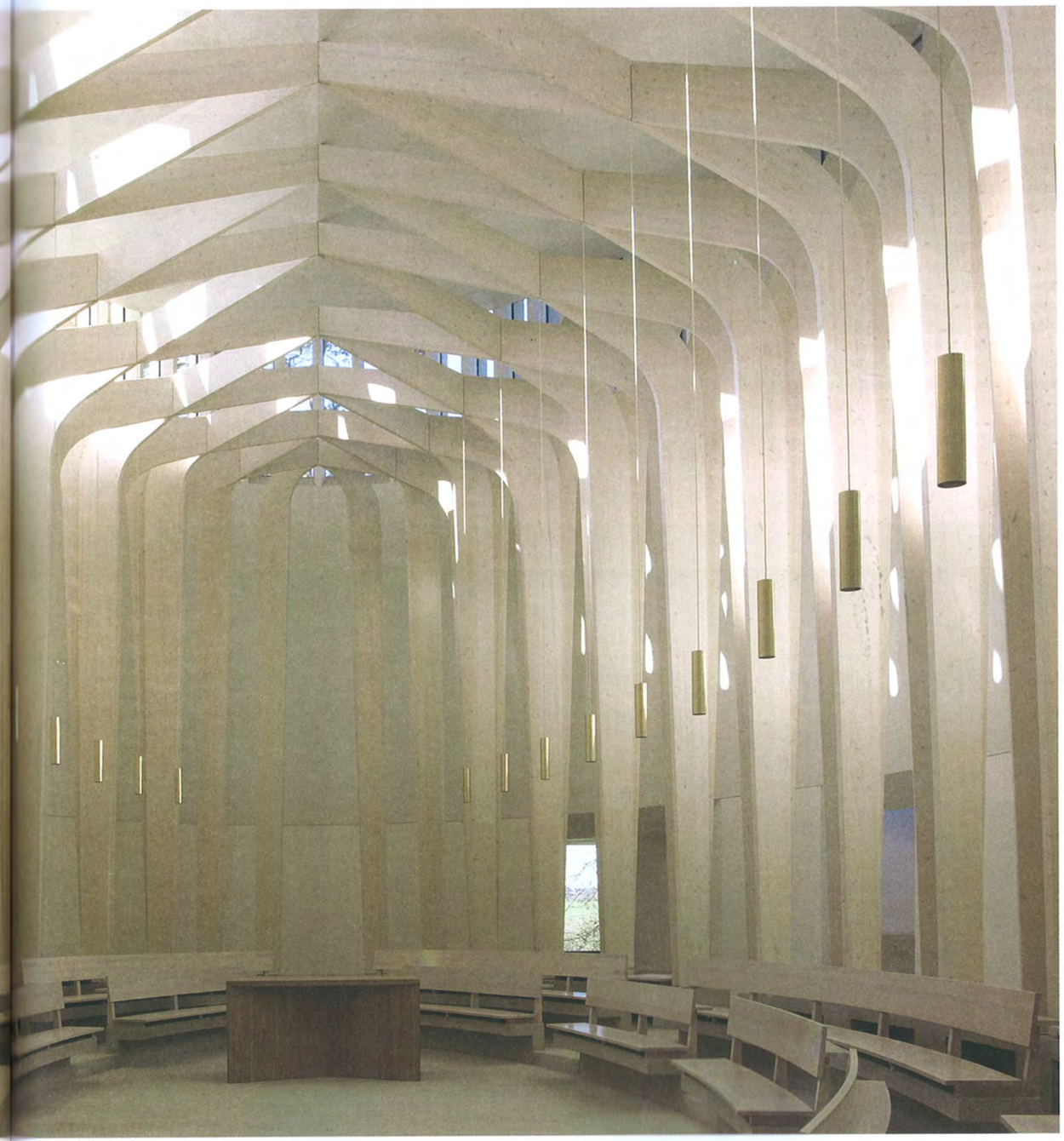
Few buildings achieve the sense of perfection of this small building, where stone dominates on the exterior and timber inside. The architect won a competition to design to a very particular brief, drawing on a poem by Seamus Heaney as inspiration for a building that can rightly be described as poetic.

Ripon College wanted a building that could serve two communities: staff and students at the college and the nuns of a small religious order, the sisters of Begbroke. The chapel needed to accommodate the worshipping needs of both, and provide a separate space for the Sisters to recite their offices, a spacious sacristy, and the necessary ancillary accommodation.

At the heart of the architect's solution was the word 'nave', which denotes the central space in a chapel but derives from 'navis', Latin for ship. The result is an elliptical building with stone walls enclosing a light timber structure that supports the roof, raising it above the clerestory glazing. This makes the most of its position in a clearing among mature trees, on high ground with views over the surrounding countryside. ➔



IMAGES: NIALL MCLAUGHLIN



A self-supporting roof and internal frame act independently from the external walls. A minimal junction between the roof and walls expresses this. Supporting the roof is the timber structure, constructed of 60mm thick prefabricated glue-laminated sections that are treated with a two-part stain, giving a light whitewashed appearance. A specially designed steel connection was used at the crossing points of the vault to conceal the connection within the slender members.

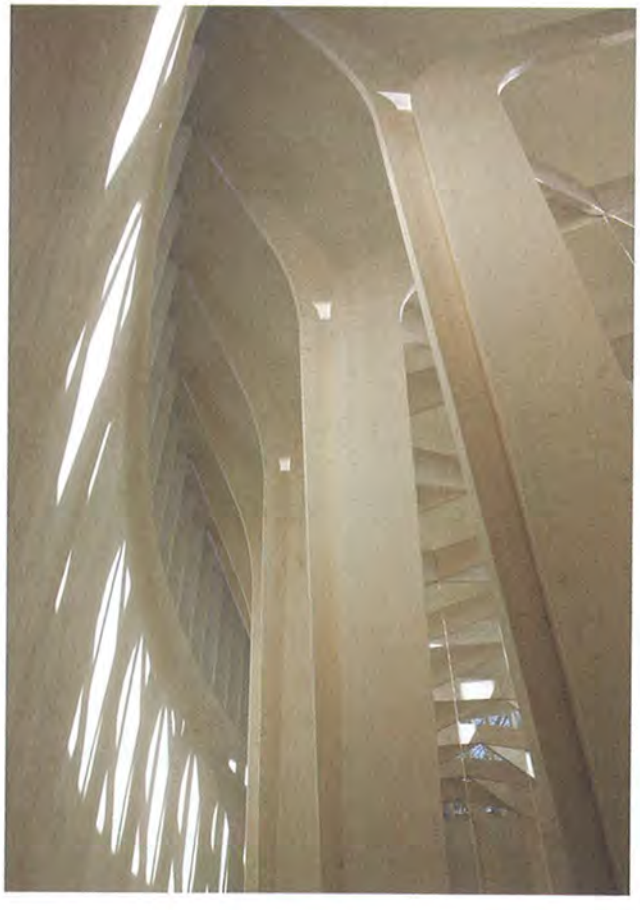
Seating, which follows the curve of the ellipse, uses the same stain. In a deliberate contrast, the loose furniture in the chapel space, such as the altar, is made of European oak, drawing attention to its religious significance.

Enormous attention to detail throughout characterises the structure. Despite its slenderness, Cowley Connectors at the top of the main structure supporting the roof are virtually hidden. All the joinery is of the very highest quality.

Enormous attention to detail throughout characterises the structure. All the joinery is of the very highest quality

The building has a sense of quiet contemplation and yet is in touch with its external environment, through either the views out or the rainbow patterns that the external louvres periodically throw across the white walls.

Solid and beautifully finished, the exterior suggests that there will be something special inside, but as one enters through the external oak doors, the result is still a surprise and a delight. The judges were knocked out by this building. Its soaring and elegant structure made it a worthy winner of the structural award – and its numinous quality, in which the timber plays a vital role, also made it the unquestioned winner of the Gold Award. ●



Building client/owner **Ripon College**
Architect **Niall McLaughlin Architects**
Structural engineer **Price and Myers**
Main contractor/ builder **Beard**
Joinery company **D Smith Joinery**
Wood supplier **Cowley Timberwork**
Other services **Westside Design, Synergy Consulting Engineers**
Wood species used **European oak, American ash, European oak glulam, spruce glulam**

How they did it

The diagrid roof barely rests on the walls of Bishop Edward King Chapel

Amid Oxfordshire's rolling fields and ancient trees stands Ripon Theological College, an Anglican seminary and its collegiate buildings, built of warm Cotswold stone by GE Street in the 1850s. They have now been joined by the new Bishop Edward King Chapel, designed by Niall McLaughlin Architects.

The Clipsham stone chapel is elliptical, a shape McLaughlin says was inspired by churches designed by Rudolf Schwarz and Peter Zumthor. The walls are of smooth ashlar stone at lower levels, a mid level of alternating smooth and rough coursed stone and a deep and delicate clerestory of glass with fine stone mullions between at the top. A timber door links the chapel to a separate single-storey sacristy, toilets and storage.

Also elliptical in plan is the internal volume, a serene and light-filled place of worship with the altar and a solid oak lectern semi-enclosed in an inner ellipse created by lofty glulam arches which rise and curve to create an open diagrid above it. The use of an ellipse, a geometrical figure with two centres, allows worship to focus on either the rituals of the Eucharist or on the spoken word: the altar is placed at one curved end, the lectern at the other. The seating plan is 'antiphonal' with two banks of congregation facing each other on fixed benches made of ash.

An ambulatory is created by the space between the arched enclosure and the external wall. 'The movement inherent in the geometry is expressed in the chapel through the perimeter ambulatory,' explains McLaughlin. 'It is possible to walk around the chapel, looking into the brighter space in the centre. The sense of looking into an illuminated clearing goes back to the earliest churches. We made a clearing to gather in the light.'

Around the ambulatory are single-storey niches which extend beyond the walls. One houses a wedge-shaped oriel window, another the space for the tabernacle, and the largest is a prayer room for the sisters to recite their offices, a top-lit space with a carefully framed view towards the altar.

The structure can be divided into two independent and self-supporting parts; first the external wall, secondly the roof structure – glulam columns and lattice diagrid.

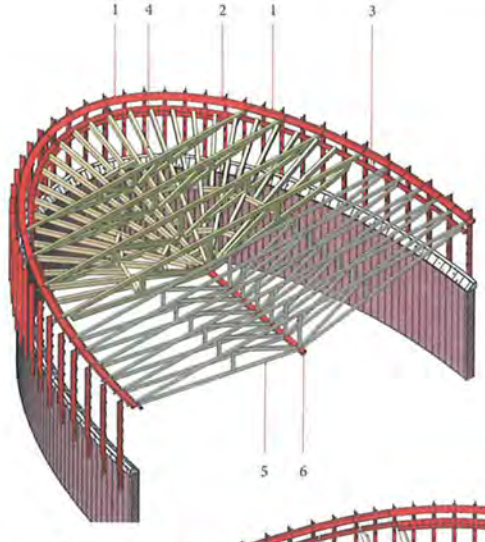
Inherently a very strong shape, the ellipse of the external wall relieves the 10m high

Diagrams

A Cut-away section showing roof trusses
B Glulam diagrid and roof steelwork
C Layout of glulam columns and diagrid

Key

1 200mm by 100mm angle
2 Curved 150mm by 100mm RHS with 200mm x 10mm plate welded to base
3 100mm by 100mm angle
4 150mm by 150mm radiating ceiling joists
5 Inverted timber trusses at 600mm centres supported on central RHS and perimeter
6 150mm by 80mm RHS



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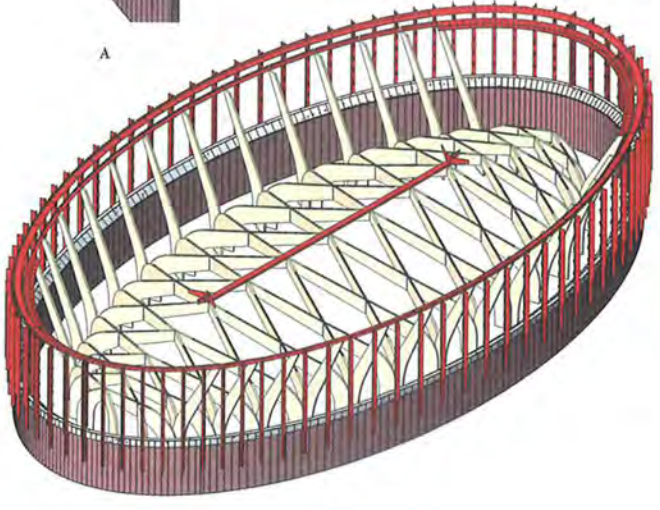

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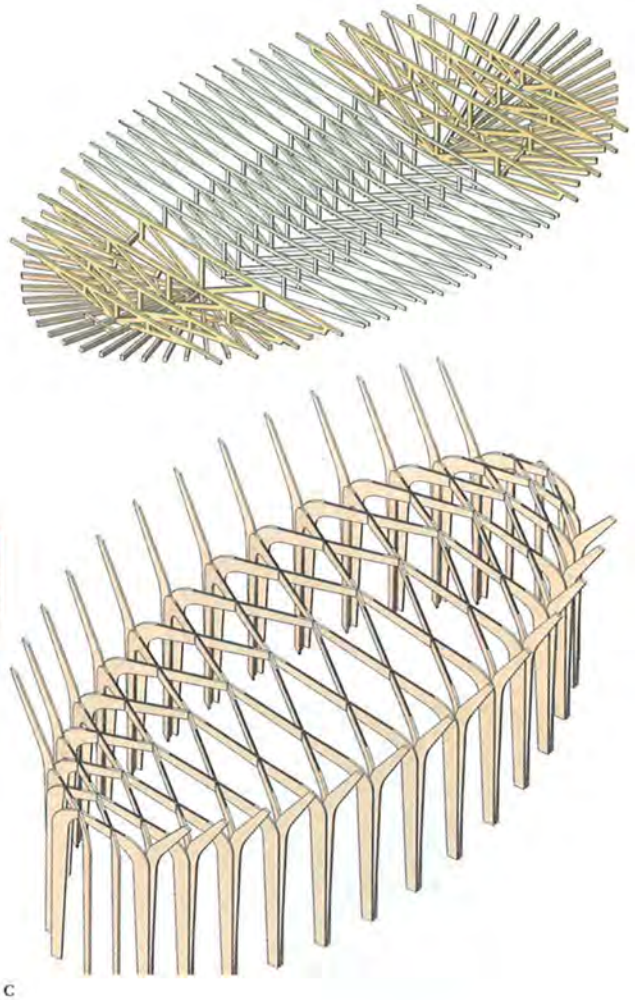


C

wall of any need for restraint at the top. Using concrete for the wall structure worked well, in terms of movement, with the outer stone leaf and internal lime plaster finish. Plans for an in-situ concrete wall were discarded due to the prohibitive costs of elliptical formwork; instead it was constructed of hollow concrete blocks with reinforced concrete infill.

Inverted timber trusses lined with staggered 6mm birch ply panels make up the roof structure, prefabricated and craned into place on site.

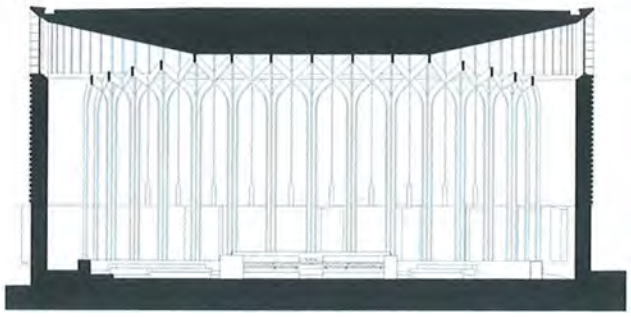
The apexes of the inverted trusses rest on a 150mm by 80mm rectangular hollow section (RHS) which runs along the tops of the curved diagrid of glulam beams and columns. At the curved ends of the ellipse the trusses fan out, supported at the ends of the RHS. With this support only lateral restraint was required where the roof trusses meet the glulam columns at the top of the clerestory mullions.

Glulam was chosen for the internal timber structure for its ability to create elegant curved columns and beams. A series of portalised columns, set in an ellipse on plan, curve inwards into the elegant open diagrid which arches over the centre of the chapel. Single 60mm thick glulam columns (tapering from 300mm to 430mm) run at the curved ends of the ellipse. Other columns are each formed of three separate glulam members; two 60mm thick outer members tapering from 300 to 560mm and a central 60mm thick member tapering from 200 to 440mm, all screwed together by timber fillets, filled and plugged. As they rise, the outer members curve inwards in different directions, connecting to adjacent glulam members to form the diagrid, while the central member curves upwards in the opposite direction to meet the clerestory mullions.

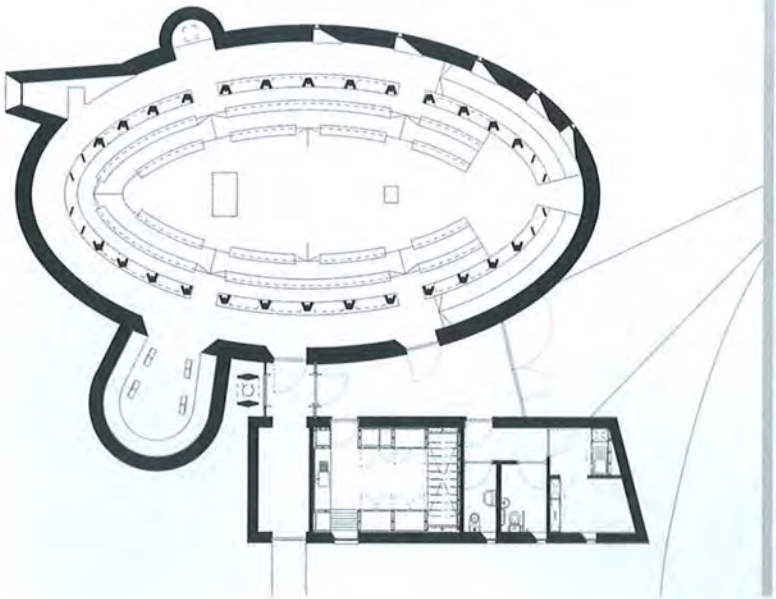
The spruce glulam components, produced by Cowley Timberwork, were CNC machined to profile and to create their concealed connections, then cut and finger-jointed to produce the curved haunches of the portalised columns. A channel was cut into the top of the glulam rafter section to house and conceal cables and lights. The glulam structure was fabricated off-site with individual elements then craned and bolted into place. This allowed for the very precise machining required to achieve the sweeping curves and concealed connections and fabricating components, to +0/-1mm tolerance. ●

Extracted from TRADA's latest case study. To read in full, visit www.trada.co.uk/casestudies/

Section



Floor plan



Finishes

The materials of the chapel interior – stone, lime plaster, ash furniture, oak doors and spruce glulam columns – share similar natural colours; the glulam was treated with a two-part stain, giving it a light, white-washed appearance. The restrained palette allows the play of light from the glass clerestory to dominate the interior.

The bell tower

The 13.5m high bell tower is a free-standing timber structure consisting of two diamond-shaped, glulam oak columns, each profiled from 250mm by 800mm sections. These cantilever from the concrete foundations. Stainless steel rods were resin-fixed into the base of the oak and bolted to a stainless steel plate cast into the foundations. The columns are reasonably deep and slender in section. They cantilever in their deep direction but work together as a cantilever Vierendeel truss in their narrow direction.