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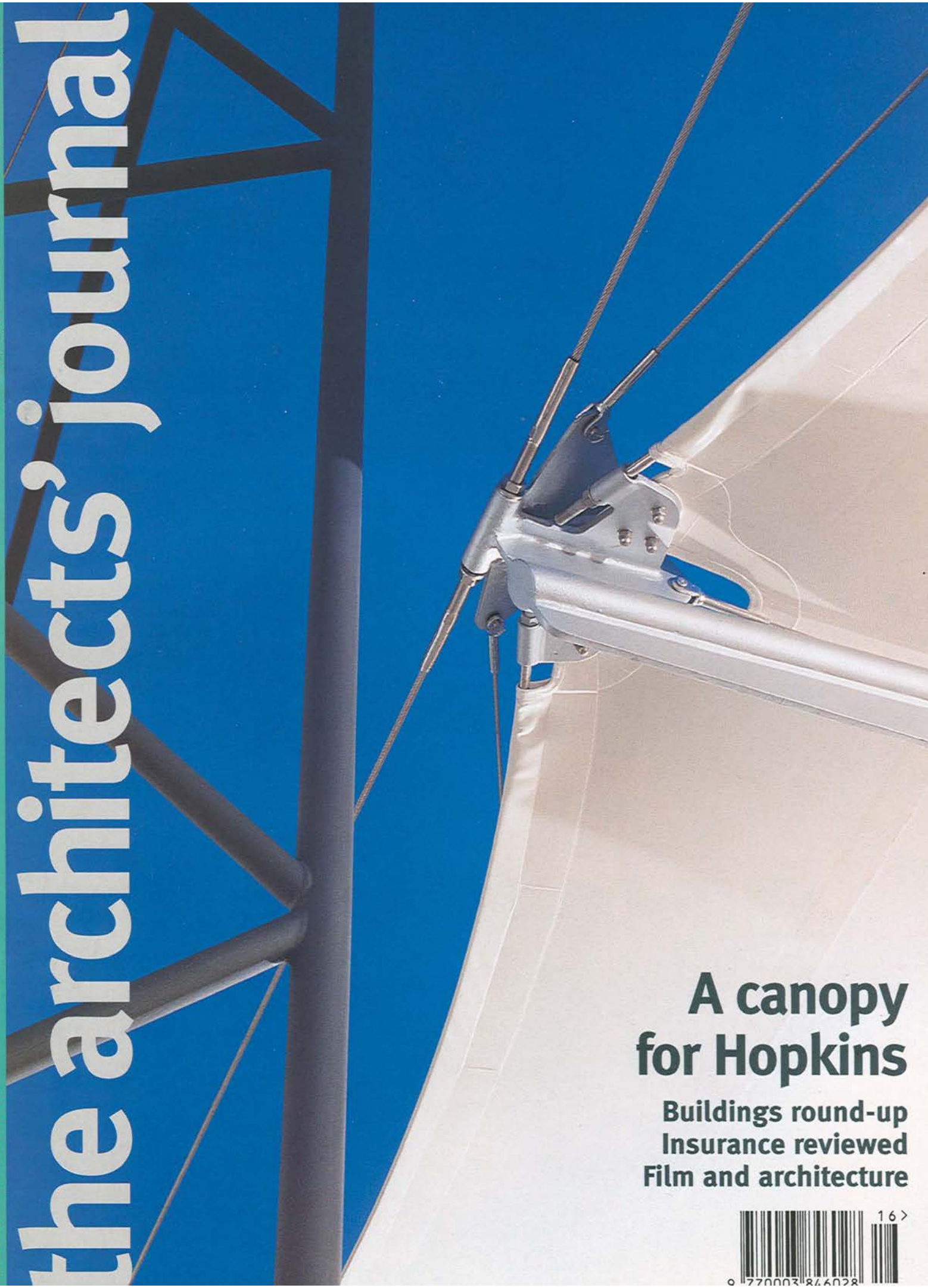

A canopy for Hopkins

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Tensile-fabric canopy gives a welcome for all seasons

The new entrance structure to Michael Hopkins and Partners' office in London shows many of the practice's hallmarks

BY DEBORAH SINGMASTER. PHOTOGRAPHS BY RICHARD DAVIES

A version of the tensile-fabric roof structure that has served the clients of Michael Hopkins and Partners so well – at Schlumberger, Lord's Cricket Ground, Glyndebourne and Buckingham Palace– has finally been adopted by the practice itself in the form of a new entrance to its north London offices.

The entrance, which is approached through a metal screen and gate fronting the pavement, serves several functions. In place of the former, unannounced side entrance, it creates a prominent, welcoming entry point to the side of the main street-fronted building; it links the two separate Patera office buildings and the rear model shop and print room for the first time (the Patera system was designed and pioneered by Michael Hopkins and Anthony Hunt at the beginning of the 1980s); it provides shelter for staff passing from one building to another in wet weather; it signals the presence of a new reception area (a free-standing glass 'box' inserted between the office and garden wall and shaded by the fabric canopy); and finally, since it is an essentially festive structure, it is a natural space for entertaining during the summer.

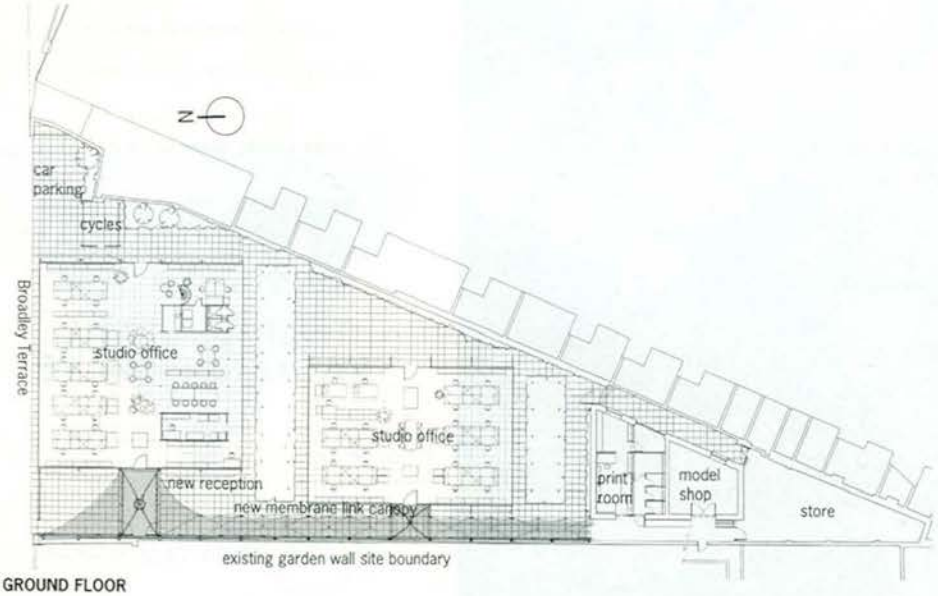
The main structural challenge in designing the entrance canopy was to establish a support system that imposed no lateral loads on the columns of the Patera buildings. This has been achieved by supporting the new structure on brackets welded to the columns and using a sliding-bearing connection. The existing boundary wall was also found to be too weak to take the necessary loading. The solution has been to strengthen the wall by stripping it back to a sound brick surface and then reinforcing it with an in-situ concrete structure infilled with concrete blockwork.

This new structure is tied into the old wall to form a composite structural wall. The concrete structure takes the form of columns and beams with 'toe' footings resisting the turning moment at the base of the wall. The wall is finished in a self-pigmented render, with slim vertical recess lines marking the position of each steel bracket and wall expansion joint.

The roof fabric came to site in one packing crate as a single folded piece. Once it was fitted to the brackets and bolted to the wall along its rear edge, the free edge was tied to the steel 'gallows' brackets. Stainless-steel 'pushdowns' supported by cables are used to increase the stress in the fabric and produce the characteristic scalloped effect.

Pairs of bow-string trusses support the steel 'push-ups' at the fabric crowns of the two office entrances; the roof over the reception area contains a glass lens to allow additional light.

The detailing of this project was particularly demanding, as the roof is just above head height and all connection points can be easily scrutinised. Robin Snell, the project architect, describes it as 'a design where every millimetre counts', one with a lot of refinement required in detailing the various connection points. The fabric-roof connections are detailed according to yacht-fitting technology – they have stitched seams and precise connection plates. At night, the canopy is illuminated by wall-mounted uplighters and becomes a large sinuous reflector with light bouncing off the shiny surface of the fabric and spilling down on to the paving.



GROUND FLOOR

Top: the new canopy provides a sheltered route. Above: detail of structural glass in the reception building

The free-standing reception box has its roots in the glass display cases designed by Michael Hopkins and Partners in 1987 for the Victoria and Albert Museum. These cases are made entirely of glass panels jointed with silicone. Another more recent reference is the combination of fabric roof and glazed screens for the foyer at Glyndebourne. At Broadley Terrace, the 12mm single-glazing panels that form the front and rear walls and roof of the reception box are supported by 19mm glass fins and beams and jointed with silicone. The fine 6mm joints and the positioning of the glazed box between existing structures dictated tight tolerances for the glass manufacture. The silicone used is high viscosity and slow setting (six days), but is extremely strong and takes up any differential movement. The reception is heated by warm air supplied through grilles in the floor. □

Since the completion of Glyndebourne and this office extension, Robin Snell has set up his own practice, Snell Associates. His help is acknowledged in the preparation of this article.

Working Details, pages 38-39

Top: the canopy and glass box form a new entrance. Above: looking back along the reinforced garden wall

CREDITS

ARCHITECT Michael Hopkins, Patty Hopkins, Robin Snell, Luisa Auletta (site architect), Emma Nsugbe, Nigel Curry
STRUCTURAL ENGINEER Ian Duncan
SERVICES ENGINEER John Berry, Bob Venning
SUBCONTRACTORS AND SUPPLIERS *fabric roof* Koit (UK), *roof patterning* Tensys, *steelwork* Littlehampton Welding, *glazing* Marcus Summers, *concrete works* Woodward Alden, *rendering* MPG Plastering, *specialist metalwork* Patera Engineering, *electrical works* Chingford Lighting, *mechanical works* DW Heating and Plumbing, *raised floor* System Floors, *carpets* Tyndale, *light fittings* Marlin Lighting, *reception furniture* Aram Designs, *reception desk* Ahrend, *flowers* Paula Pryke

Working details

A FABRIC MEMBRANE CANOPY

The new 50m-long membrane-covered route from the main street entrance connects the two studio office buildings and the rear model shop. It runs beside an original brick wall which forms the site boundary.

The brick wall was strengthened with an in-situ concrete frame infilled with blockwork to form a composite wall. New footings resist the bending moment created by the new structure.

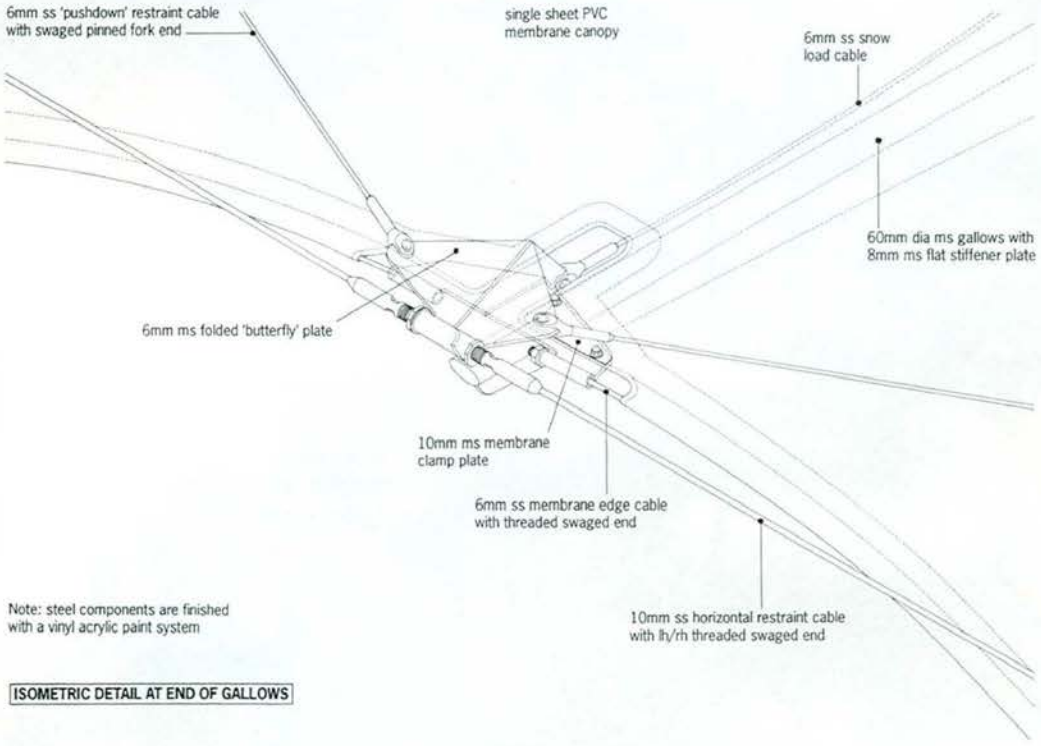
The canopy – a single sheet of coated PVC membrane – is supported by steel 'gallows' arms bolted to the wall at 3.6m centres. The continuous gutter, a 178 x 89mm steel channel, is bolted to the top of the wall and connects with all the gallows. The gutter is lined with a preformed, single-ply waterproof membrane. Rainwater discharges into four downpipes concealed in the wall.

The rear edge of the membrane is bolted with clamp plates to a continuous 150 x 79mm angle fixed to the face of the gutter channel. Six-millimetre stainless-steel edge cables are sleeved into the leading edge of the membrane and tied off with swaged connections to the ends of the gallows. The edges of the fabric at the gallows connection have been fitted with triangular reinforcement pieces which are bolted to membrane plates welded to the ends of the gallows.

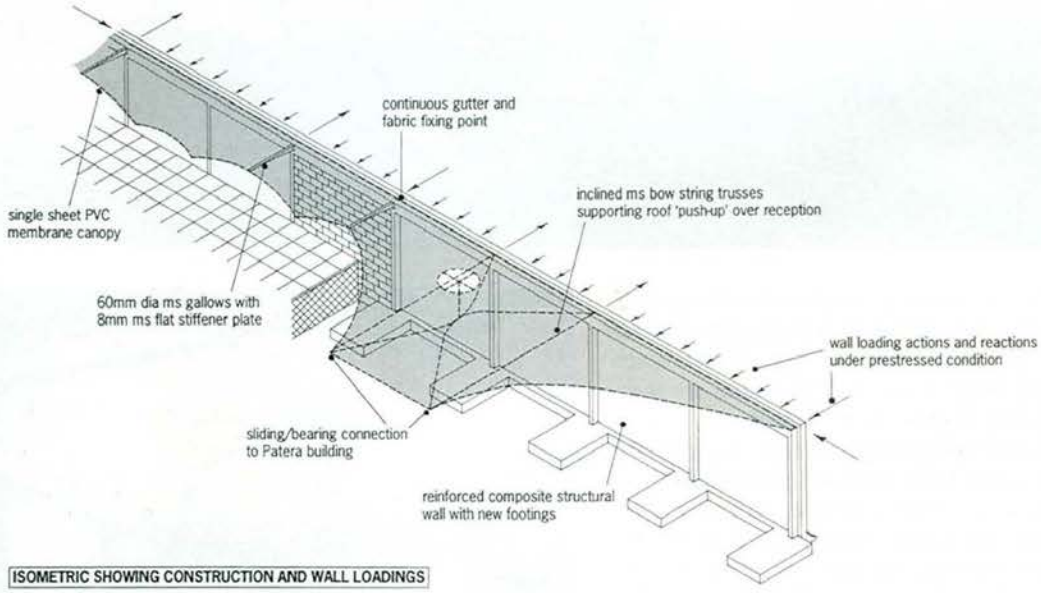
To induce tension in the membrane and produce the characteristic scalloped effect, a 34mm-diameter, stainless-steel 'pushdown' was inserted into the leading edge of the fabric midway between each gallows. The pushdown is restrained by four cables fixed to the adjacent steelwork. The 6mm edge cable, sleeved into the leading edge of the membrane, runs through a routed spade-shaped plate which is threaded on to the end of the pushdown. The pushdown is adjustable and is used to tension the membrane. □

Susan Dawson

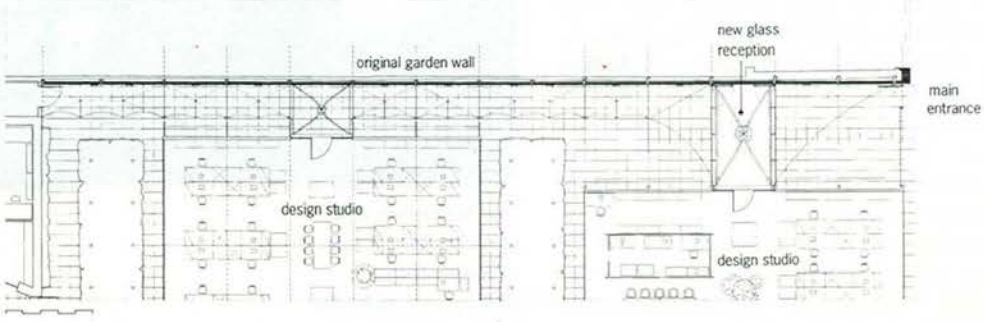
DETAILS AND PLAN OF MEMBRANE CANOPY



ISOMETRIC DETAIL AT END OF GALLOWS



ISOMETRIC SHOWING CONSTRUCTION AND WALL LOADINGS



KEY PLAN

ISOMETRIC OF MEMBRANE CANOPY