



Low maintenance glass beams support the new roof over the swimming pool on a private estate in Guernsey - the first time structural glass has been used in this way on the island. (For further details, see Page 2, column 1)

## The bright future for structural glass design

Malishev Wilson Engineers is about to celebrate its second anniversary as a consulting engineering practice, specialising mainly but by no means exclusively in engineering structures which make use of glass for support, a material fast becoming popular among clients and their architects.

We have come a long way in this short time, working on many interesting structures. Happily, they have lived up to expectations that they would provide satisfaction - both for our clients who have chosen to use glass as an exciting and modern building material and also for us who have been fortunate enough to work on some challenging and rewarding projects.

Glass is not a material for the faint-hearted in construction. It requires a deep understanding of its engineering properties and potential, extreme care in the detail of its preparation and assembly on site and, above all, a true respect for the high degree of tolerances required if components are to interact and carry the required loads successfully.

As we have said, we don't only work with glass. We also have the thorough grounding in the wider aspects of structural civil engineering, expected of our professional skills and qualifications.

We outline below (*See Pages 2 and 3*) some of the projects we have been working on during the past two years. We have tried, where possible, to highlight some of their interesting engineering features.

Comments or feedback from existing clients and from potential customers reading this newsletter will be welcomed. (*See foot of Page 3 for contact details*)

We would like to take this opportunity to wish all our clients a happy New Year and a prosperous 2006. We also hope that you have enjoyed your Christmas holiday.

*Philip Wilson and Gennady Vasilchenko-Malishev  
Partners of Malishev Wilson Engineers*

## Structural glass beams replace stainless steel on swimming pool roof

Structural glass was chosen as the best design solution to a maintenance problem with a swimming pool roof on a private estate in Guernsey, where stainless steel cable trusses had corroded just two years after installation.

The new all glass roof (*See page 1 for picture*), supported by five 8m-long glass beams, has now been successfully installed. The beams are believed to be the first example of structural glass in use on this scale on the island.

Malishev Wilson Engineers were called in as structural consultants for the new design work and also to check that the existing steel support structure for the pool would accommodate the extra load of the new glass roof

## MWE appointed for hanging glass rooms at Trinity College

Malishev Wilson Engineers have been appointed structural consultants for the new hanging glass rooms being installed as part of the refurbishment of The Wolfson Building at Trinity College, Cambridge.

Glass panels for the rooms will be suspended from concrete slabs by means of two-point fixings and laterally restrained by structurally bonded silicone. Due to its proximity to surrounding historic buildings, the job presents us with an interesting logistics challenge.

In addition to the structural design of the rooms, we have been commissioned to produce a method statement for the installation of glass panels for the walls, on the severely restricted site.

The panels and glazing equipment will be lifted by special robot to podium level, where there is access to scaffolding for the hanging rooms.

## New frontage in Leicester Sq

MWE are structural engineers for the design of a new glass frontage to the ground and first floor of the high profile MTV office building in Leicester Sq, London.



## Aesthetic design chosen for two glass staircases in new-build country house

This all glass staircase, one of two, is a main architectural feature inside a large new-build country house development completed in Warwickshire, UK.

MWE were responsible for the structural design of the purpose-built staircases and we also had a major input into their aesthetic appearance – a major consideration for the client.

The staircases, leading from large halls at ground floor level to bedroom accommodation above, have 18 stair treads supported by a six metre-long glass stringer.



## Consultancy for glass lift enclosures at luxury home

MWE have played a central part in developing the design concept with architects for three identical glass lift shaft enclosures in a high quality new-build mansion development in Boltons Place, in London's South Kensington. The lift shafts are being built at a budgeted cost of £500,000.

The three enclosures measure 1.7m wide, 2.5m deep and 20m tall. The stacked glass panels support their own weight and a series of welded flat plate portal frames provide lateral stability of the whole structure. Stainless steel portal frames are attached to the concrete slab at each floor level, with specially designed fixings to accommodate vertical movement of the floor due to shrinkage, creep and live load deformations.

The project is well into the fabrication stage and is expected to be on site for installation soon.

## Glass lift shaft will boost access at Festival Hall

We are specialist structural engineers for the design of the glass enclosure for a new lift shaft being constructed at the Royal Festival Hall on London's South Bank, as part of a £ 91 million refurbishment of the internationally renowned concert venue.

The new lift will increase the rate at which audiences can access the hall's auditorium. It measures 2.9m wide, 3.3m deep and 27 m high. The large glass panels of the enclosure, each weigh up to 400 kg. They will be structurally bonded to the extruded aluminium frame of the lift shaft.

A series of movement joints, between the lift shaft and the main concrete floor structure of the building, is incorporated in the design to accommodate differential movements.

The lift enclosure, budgeted at some £1 m, is due on site for erection this Spring, with the Festival Hall re-opening to the public in the Summer of 2007.

## Troubleshooters for roof canopy design

MWE have been called in to solve an awkward design problem involving the erection of a new 35m-long, 5m-wide glass roof canopy at a landmark public building in central London. The canopy has an irregular structural grid, where metal supporting frames are subjected to differential movements.

In short time, we produced working sketches and detailed design calculations which enabled the contractor to gain necessary approval procedures for erection and start building the structure.

There are various sizes of glass panels in the canopy, typically 1m wide by 3m long. The panels are now acting as bracing for the steel frames. A finite element analysis programme was conducted to work out the precise magnitudes of the required connection forces.

Friction grip bolted connections are mainly being used.



High quality finishes have been achieved on the concrete surfaces of the main building

## First job in Russia progresses smoothly

Malishev Wilson Engineers have been working on their first major construction project in Russia, having been appointed by a private client to provide a package of structural engineering services for a large new housing development at Pozdniakovo, near Moscow.

The main engineering challenge has been the swampy ground conditions because the area floods in Spring. So a newly developed Bituthene waterproofing system has been installed at foundation level on the exterior of the main building to prevent water ingress.

Construction of the main building, which has a total floor area of 1,450 sq m, is now well under way - as is work on two ancillary buildings.

MWE has been working closely with the Anglo-Russian architectural practice on the project, successfully exchanging CAD drawings and consulting remotely over the internet.

A finite element analysis programme was used to help with the design for this somewhat complex building design.

The project is running smoothly and is due for completion by the end of this year.



A special waterproofing membrane has been used for the basement foundations.